THE RUBBER AGE

ESTABLISHED 1917

COVERS ALL PHASES OF THE PRODUCTION AND MARKETING OF CRUDE RUBBER AND THE MANUFACTURE AND DISTRIBUTION OF RUBBER GOODS

Vol. 35 JUNE, 1934 No. 3

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No. 27

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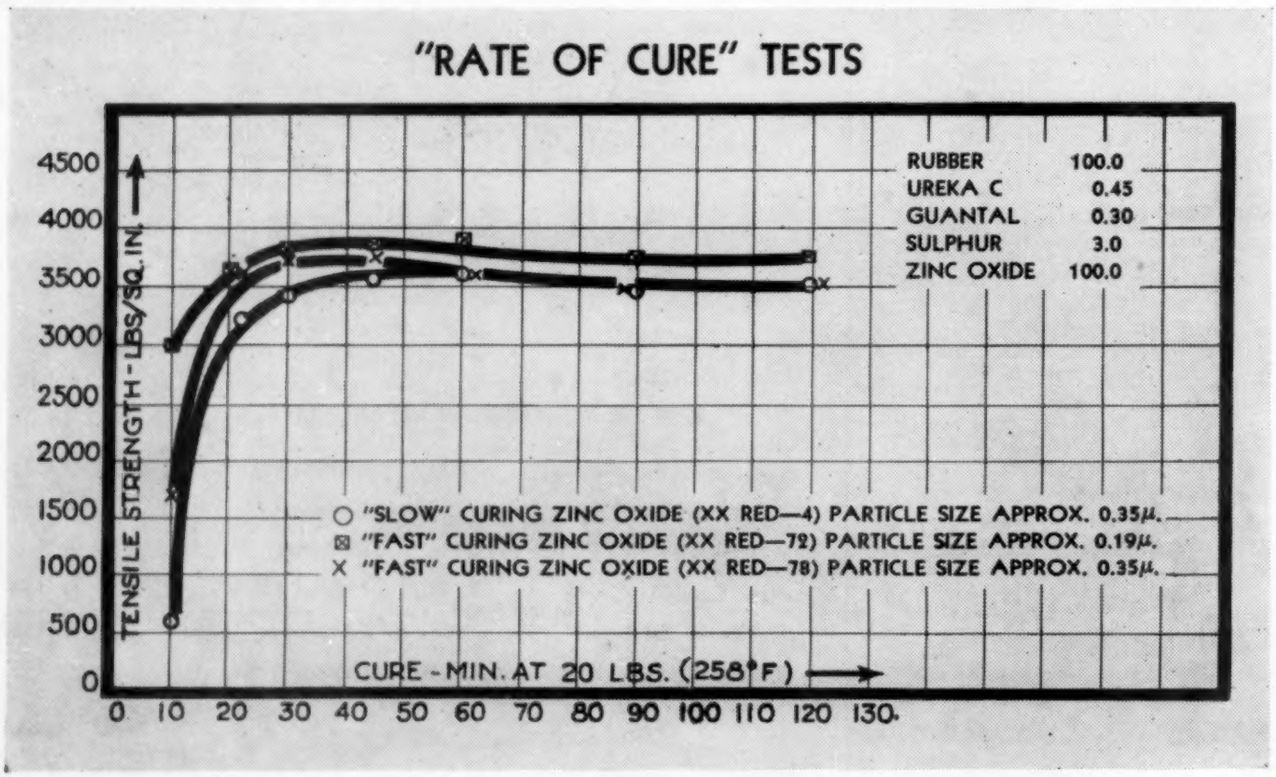

THE RUBBER AGE

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Latex Finds a Vital Place In the Textile Industry

Its Applications Increase Greatly in Recent Years As More Attention Is Directed to Its Technology

By J. EDWARDES and J. W. MACKAY

Heveatex Corporation, Melrose, Mass.

SOME time ago a speaker at a meeting of textile industrialists stated that no progress had been made in the textile industry for the past hundred years and, whereas the rapidly expanding application of latex in this industry has now discounted this jibe, this long overdue development in modern practice is somewhat strange as it has been established that the Indians of South America have used it since time immemorial for the waterproofing of cloths*. Most remarkable of all is the fact that they discovered that by mixing sulphur, or when this was not available, gunpowder, with the latex, a better result was obtained. A sample of a cloth made by the Indians was examined in Malaya by one of the authors several years ago which proved to be practically waterproof and able to withstand exposure to the tropical sun without any detrimental effect, whereas fabric treated with ordinary latex becomes tacky after a couple of hours under such conditions. This sample gave a figure of .9% combined sulphur on the rubber.

Rubber is in all respects an ideal material for application to textiles, on account of its tensile strength and elastic properties, which cannot be approached by any other material commonly used for the sizing of fabrics. Until the advent of latex technology, however, the necescity for using inflammable solvents in the preparation of rubber cements militated against its widespread adoption. The drying equipment and other machinery generally encountered in textile plants is admirably adapted for latex application with little or no alteration, the only precaution generally necessary being the elimination of copper or brass parts. As a rule, in the application of latex to textiles, vulcanization is desirable. Colors can be introduced with ease and treated fabrics are readily adaptable to union dyeing. At first, the abrasion encountered during rope dyeing proved a formidable obstacle to overcome, but latex compounds are now available which will withstand this harsh treatment.

Following is a brief summary of some of the main applications of latex in connection with textiles that have materialized to date:

V-Weave Pile Fabrics

This field has probably supplied one of the most important applications. The idea of applying sizings and rubber

* Henry G. Pearson, "Rubber Country of the Amazon," N. Y. India Rubber Publishing Co., 1911.

to the backs of pile fabrics is not new and was used some years ago with varying success. The application of latex, however, has resulted in renewed interest and many improvements in this field, particularly in the manufacture of automobile plush, as a result of which the production costs have been greatly decreased. The replacement of the W-weave type with the V-weave has resulted in the speeding up of the looms and the production of a denser pile, 75% of which appears on the face of the material, whereas with the old W-weave 40% was hidden in the back. Properly compounded and cured latex compounds will withstand the action of the most drastic scouring and dyeing processes and present a remarkable resistance to natural ageing. Copper dye jigs and dye vats have been commonly used in the textile plants and where the textile technologists were unfamiliar with the properties of rubber, at first caused serious trouble but it is gratifying to record that these are now being generally replaced by monel metal substitutes.

Many textile dyes previously used had a high copper and manganese content which also resulted in frequent trouble, particularly in rope dyeing. (It has been found that .01 grams of copper sulphate per 100 cc. of latex will produce a tacky rubber. Similarly it has been shown recently that .001 to .02% of manganese on the rubber will produce the same effect.*) It was also found that in the application of latex the best results are obtained by ageing the coated fabric in a warm room for 12-24 hours between the coating and dyeing processes.

The method of application for these fabrics is quite simple as every pile fabric mill that finishes its own materials has at least one enclosed chain type dryer, variable speed and adequate temperature control which are admirably adapted to meet the necessary requirements for drying and vulcanization of latex compounds. The only additional adjuncts necessary are a doctor bladê or knife attached in front of the dryer and a suitable attachment for applying uniform tension to the fabric before passing under the knife. The fabric, under suitable tension attained by means of this device, is passed face down under the knife while the compound is spread out on it in a thin film by the knife. The weight of rubber per square yard is controlled by the adjustment of the knife or tension or both, the lineal speed of the fabric through the dryer being dependent on the wardage capacity of the latter and the maximum temperature obtainable while under full load with a latex coated fabric.

Rugs and Carpets

Latex ..as been tried in this field for the past six years, and even recently in some cases with disastrous results, generally attributable to the experimenters having no comprehension of the chemistry of latex or of rubber, with the result that latex was applied in all kinds of mixtures and without ageing inhibitors. Proper compounding, however, has resulted in the cheapening of the weave of Axminster, velvet and American-Oriental rugs, because latex sizing not only acts as a stiffener but enables weight and body to be added to the rug. All the fibres are bound into a solid mass for the entire life of the rug, which will not beat out under the most drastic treatment. With a suitable latex sizing cheaply woven 4, 5 or 6 shot heavy Axminster rugs can be produced with an enhanced sales appeal. American Orientals and higher priced rugs demand light weight and transparent sizing, which will show up the pattern of the back of the rugs.

In this connection, it should be noted that the application of latex demands the discarding of preconceived ideas formed in connection with glue starch sizing. Attempts made to combine this type of sizing with latex have generally been abortive. Latex sizing is naturally more expensive than the old type of sizing, but the actual cost of manufacture can generally be reduced owing to the saving effected by cheapening the weave.

Automobile carpets are now produced at a very low cost by weaving on a modified plush loom and backing with a latex compound. As it comes from the loom the product is as flimsy as a towel with extremely low strength. After the latex backing has been applied, however, a far better product than the old, expensive, woven automobile carpet is produced. It has the advantage of being adaptable to trimming with shears to any desired shape without the necessity of hemming or binding. The same process has been used for carpets intended for domestic and office use, the edges being pieced together with special adhesive tape.

The method of application most commonly used by the finishing department in a carpet mill is the lap or size roll. This method of applying latex compounds is becoming more general as suitable materials are developed which will withstand harsh treatment. A lap or size roll with a smooth motion and adjustable speed control will produce any desired coating or sizing, that is, the sizing may be driven into the back of the rug and be 75% hidden or may be spread on the surface with little or no penetration. Good penetration, however, is generally desirable as it reinforces the rug. Drying and vulcanizing is carried out in the regular carpet dryer which has proved highly satisfactory for this purpose with the compounds developed for this type of work.

Rug Cushions

These are generally prepared by the picking of jute bat to burlap. A cushion prepared in this way has the undesirable property of fraying or rubbing off and does not possess the recuperating properties possible when the fibres are embedded in a solid mass of rubber enabling a springlike effect to be produced on pressure being applied and released. Latex compounds are applied by spraying the burlap with a thin coat, also each layer of bat as it comes from the machine, thus eliminating the picking operation and producing a rug cushion in a single unit, which will stand severe handling.

Non-Skid Rugs

For a non-skid rug backing, a thin film of rubber is required with a low degree of vulcanization and slightly tacky to prevent scatter rugs from slipping on polished floors. It should be noted that this backing will not withstand the rug-dry-cleaning process. Many cleaners now, however, apply this non-skid backing as an inducement to trade as the cost is practically negligible.

Bath Mats

Several towel manufacturers have taken up the weaving of terry cloth and backing with a latex compound for use as bath mats. The coating may be thin or thick and spongy and is spread on in colors which generally harmonize with the terry cloth. A further application of this process is possible for the manufacture of beach robes.

Combining Fabrics

Until recently a textile manufacturer generally arranged to have this done for him in a rubber plant which involved him in extra handling charges and delays on rush orders. The use of latex compounds has enabled the textile manufacturer now to combine in his own plant, the whole operation being performed under his control, eliminating needless expense and delays. Latex compounds have been successfully applied in the production of backing fabrics

(Continued on page 130)

* *Journal of the Rubber Research Institute of Malaya*, Sept., 1933, page 29.

Light Weight, High-Speed Rail Cars Are Adapted for City Transit Use

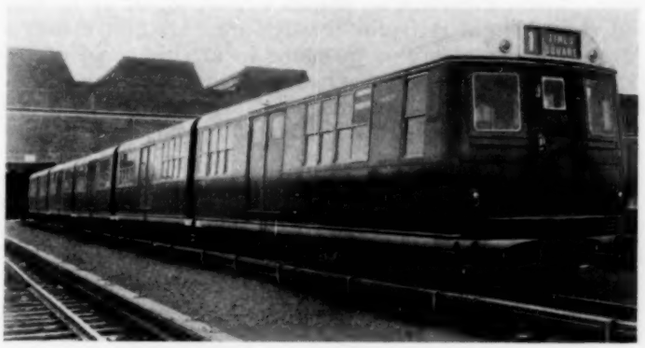
Units for New York Subways, Chicago Trolley Lines; Goodyear Will Construct New Haven Streamline Train

HIGH-SPEED, lightweight rail vehicles, such as have been popularized in recent months by western railroads, are now being adapted to use in inter-urban transit lines. The application of units with many of the features of the Burlington Zephyr and the Union Pacific M-10,000 is being extended to the subway systems of New York City and the surface car lines of Chicago. And, in the meantime, the Goodyear dirigible plant at Akron is working on the construction of an ultra-modern "Rail Zeppelin" for the New York, New Haven & Hartford Railroad.

Two multi-section cars, which embody the latest developments in car design and equipment and employ rubber lavishly from their wheel trucks to their upholstery, have been constructed for experimental operations on the New York City subway and elevated lines of the Brooklyn-Manhattan Transit Corporation. One car, built by the Pullman Car & Manufacturing Corporation and equipped with motor, control and brake apparatus developed by the Westinghouse Electric & Manufacturing Company and the Westinghouse Air Brake Company, is constructed principally of aluminum. The second car has been constructed by the E. G. Budd Manufacturing Company and equipped with motor, control, door and brake apparatus developed by the General Electric Company, and is built principally of stainless steel.

Both cars will be placed in operation in the near future. Their use will make it possible, for example, to cut down the time of a typical 49-minute run to only 36 minutes.

The multi-section car built by the Pullman factory is articulated, having five sections and a total overall length of 170 feet. The seating capacity is 186, with an additional estimated standing capacity of 490. Every effort has been made to assure the comfort of the passengers with soft cushioned riding, free from jars, jolts, swaying of the sections and nosing. The doors open and close automatically at the control of the motorman or a trainman, an electric chime sounding before they are closed. With each door equipped with a three-inch rubber cushioned bumper, it is believed that injury to passengers is practically impossible.



High-Speed Subway Train

This five section unit is the first to be placed in operation on New York's B.-M.T. lines. It is lavishly cushioned with rubber for comfort

Rubberized Hair Upholstery

. . . is used in lieu of ordinary spring type upholstery in the new subway train. This marks a distinct innovation in the United States

In the articulation of the car sections, the gap between the two passageway members is made weather tight by means of rubber diaphragms joining the two sections. Particular attention has been paid to the speedy removal of sections when desired, and these diaphragms are of a quickly removable type.

"Within the past ten years, what might be called the 'rubber era' has been gathering momentum," says W. H. Mussey, general mechanical engineer of the Pullman Car & Manufacturing Corporation, in regard to truck construction of this car. "Pullman has been a leader in this development. On these trucks we have installed rubber where there seemed to be sufficient background to warrant its use, and this background is of a somewhat experimental nature in some instances, but sufficient to warrant its employment."

Between the wing castings and the truck side frame are four rubber discs or "doughnuts" per journal. These serve as spacers between wing castings and truck frame and as a supporting means between the axle and truck frame. Clearance is provided between journal box and truck frame to permit free movement in all directions, restrained only by the rubber discs.

In parallel with the rubber discs and at the outer extremities of the wings are coil springs which take a proportion of the load imposed by the truck frame. Rubber pads are placed above and below these springs to destroy

The Rail Zeppelin

This is how the streamline train of the New Haven will appear when it begins its Boston to Providence service. Construction of this train is about to start at the Akron dirigible plant of the Goodyear-Zeppelin Corporation

metallic contact. The major portion of the static load is borne by the coil springs and the rubber discs take very little. These discs are so placed and designed as to take the shocks from rail joint impact, etc. Excessive lateral forces are taken care of by plungers at either end of the bolster. These plungers bear against the truck side frame and their lateral path is controlled by Lord rubber bushings, which are inserted in the plungers and serve to keep them extended.

"The present-day requirements of a truck are to provide means for propulsion and deceleration, relieve car body from shocks, jars and any movement which might be objectionable or discomforting to the passenger," says Mr. Mussey. "The conventional type of truck has seemingly met the conditions with a large measure of success, but the automobile with its rubber tires, shock absorbers and lack of noise due to rubber contact with the roadway has introduced a new 'yardstick.'"

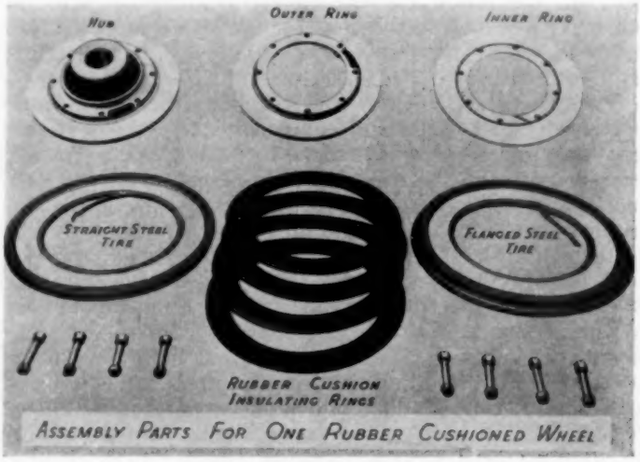
A distinct innovation in this country, rubberized hair is used in lieu of the ordinary spring type upholstery. On the surface, the seats and backs are upholstered in brown leather with a reddish cast.

Fifty-six rubber parts are used in the new Noiseless Street Car now in demonstration service in Chicago. The car is the product of the J. G. Brill Company, of Philadelphia. It will be greatly preferred to the present type of street car, because it costs less to operate due to lighter weight and has great advantages in speed, comfort and quietness, say engineers of the Firestone Tire & Rubber Company, which supplied the rubber parts.

Tests have shown it will cover a route in at least 10 to 15 per cent less time due to increased speed and faster and smoother starting and stopping. Even when the car was traveling at 40 miles per hour and the brakes were suddenly applied, it came to a smooth stop within 50 feet.

The car weighs 36,500 pounds, eight tons less than some of the old type of cars. Because it is silent, it can be used in additional restricted residential sections.

One of the most interesting rubber features is the insulated cushion wheel in which the axle is supported through a series of rubber cushion rings, so that although the "steel tire" is used, the wheel gives somewhat the same riding qualities as a rubber tire, with the added advantage that the steel car rail is smoother than the ordinary pavement.



56 Rubber Parts in New Trolley

Chicago's new noiseless street car makes generous use of rubber. Here are the assembly parts for one of its rubber insulated cushion wheels

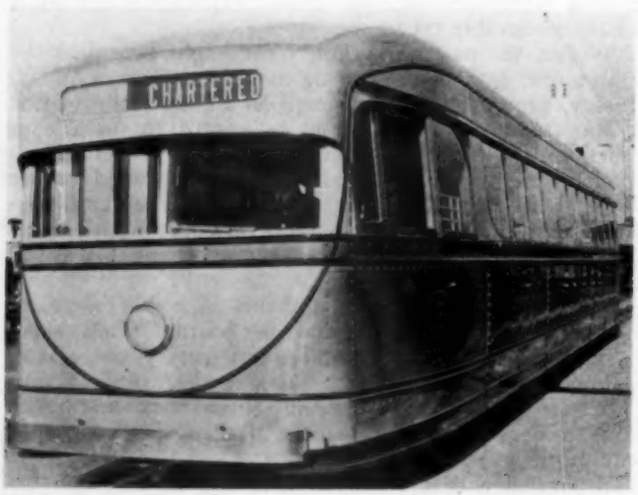
The cushion wheel includes two steel tires side by side, one of them flanged, and a series of four rubber insulators, two for each side of the split steel tire—so that the flanged and unflanged halves each become a complete unit in themselves. The rubber rings are assembled under compression and carry a maximum load of 7,000 pounds for each wheel or 56,000 pounds for the car, which weighs only 45,000 pounds fully loaded.

In various parts of the car, rubber is used in a manner known as "in shear," or in other words in a vertical plane. This special wheel reduces the noise between wheel and rail to one-quarter of the usual volume and the car cannot be heard above the noise of other street traffic.

The spring suspension has been carefully insulated with rubber to give further comfort. No matter what direction the stress of the car may be, the rubber parts are there to deflect and throw the load on the rubber.

Plans are going forward in Akron for the construction of a rail Zeppelin, to be placed in the service of the New York, New Haven and Hartford Railroad Company, it is announced by the Goodyear-Zeppelin Corporation. Contract for construction of the new-type, moderate weight,

(Continued on page 131)



Last Word in Trolley Construction

Light weight and smoother operation enable this new Chicago surface car to cover a route in 10 to 15 per cent less time than older type trolleys

Good Market for Rubber Products Is to Be Found in Mexico*

A Detailed Analysis of the Classes of Items for Which There Is a Demand by Our Southern Neighbor

By H. L. BROWN
Assistant Canadian Trade Commissioner

THERE is a good market in Mexico for practically all types of rubber products, although it is somewhat limited for those lines which are manufactured within the country and receive tariff protection. Belting and hose offer good opportunities in the industrial field and most classes of sundry and novelty products find a ready sale.

Local Production

The industrial census of 1930, based on data for the calendar year 1929, mentions 10 plants producing articles of rubber. The capital investment at that time was 2,520,-156 pesos and the total number of employees in all plants amounted to 546. The value of the primary materials used was 615,131 pesos, of which 318,138 pesos were of imported materials. The total value of production for 1929 was estimated at 1,987,292 pesos. Of the total of 10 plants, one, employing 83 workers, reported a total production for the year of 704,276 pesos; four, with a total of 306 employees, had a total value of production of 1,154,-308 pesos. The remaining five plants produced less than 100,000 pesos of goods each during 1929. There has been a fair development since that year; other factories are being opened, production has been increased and American companies have entered into alliances with Mexican concerns.

Automobile Tires and Tubes

The manufacture of tires in Mexico has increasingly cut into the business of the leading United States and British houses with branch offices and warehouses in this country. During the past year two prominent United States companies have placed the manufacture of their products in the hands of a Mexican company, and their tires are being sold under the American name hyphenated with the Mexican.

It appears that there has been some over-estimation of the importance of Mexico as a market for tires, and several foreign companies have found it so limited that they are withdrawing. An unofficial estimate places the number of automobiles and trucks of all makes in the entire republic at about 90,000. Nevertheless the total value of imports of tires and tubes in 1932 was 2,431,000 pesos or about $900,000. Foreign tires are, of course, still being sold in fair quantities to those desiring the best quality.

The United States product has held the field, figures of exportations from that country to Mexico in 1931 being as follows: truck and bus tire casings, 8,608 pieces ($161,-206); other automobile tire casings, 56,947 pieces ($592,-859); inner tubes for automobiles, 24,745 pieces ($42,503); other casings and tubes, 7,904 pieces ($17,315); solid tires for automobiles and trucks, 536 ($25,279); other solid tires, 14,825 pieces ($4,599). Sundries and repair materials were valued at $62,326.

Belting, Hose, and Packing

Belting.—There is a considerable demand throughout Mexico for rubber belting for the transmission of power and for conveyors. Importations even in 1932, a bad year, were valued at 260,000 pesos or about $100,000. At the present time much of the business is controlled by two United States companies, and any attempt to obtain a worthwhile share of the market would probably have to begin on the basis of equal quality at a slightly lower price or better quality at the same price as the United States product. All standard widths and thicknesses are in demand, but the greatest sale in transmission belting is for sizes up to 6-inch. The following are the sizes of 28-ounce belting in common demand: 1½-inch, 3-ply; 2-inch, 3-ply; 2½-inch, 3-ply, 3-inch, 3- and 4-ply; 4-inch, 4-ply; 5-inch, 4-ply; and 6-inch, 4-ply; there is a very small demand for 3½-inch, 4-ply. In the heavier 36-ounce belting the following sizes are generally used: 1½-inch, 3-ply, 1¾-inch, 3-ply; 2-inch, 3-ply; 2½-inch, 3-ply; 3-inch, 4-ply; 4-inch, 4-ply; 5-inch, 4-ply; and 6-inch, 4- and 5-ply; of the wider beltings the more common sizes are 7-inch, 5-ply; 8-inch, 5-ply; 10-inch, 5- and 6-ply; 12-inch, 6-ply; 14-inch, 6-ply; and 18-inch, 6-ply. The larger sizes are usually imported to order to avoid deterioration in stock; this especially applies to conveyor beltings. It is rather costly to sell conveyor belting direct to the mines, as it is quite often necessary that a technical expert visit each mine, no matter how inaccessible, and demonstrate the quality and advantages of the material that he is selling. This may be necessary even when the mines have foreign purchasing offices. The transportation and manufacturing companies are, of course, located in the larger centres. In 1931 the United States shipped to Mexico 185,406 pounds valued at $99,098 of rubber belting for machinery.

Hose.—There is a steady and good demand for rubber hose of all kinds. Imports in 1932, of rubber tubes over 15 mm. in diameter, were valued at 320,000 pesos or about $115,000. Air hose finds a good sale in normal times, although the market is somewhat restricted at the present because of lessened activity in the mines and other indus-

* Abstracted from the December 30, 1933, and January 6, 1934, issues of the *Commercial Intelligence Journal.*

trial plants. With increases in metal prices there should be an improvement in the sales to the mines, as replacements must soon be made of the old equipment. All standard sizes are in use, but the greatest demand seems to be for the 1-inch air hose. There is a moderate amount of business in industrial water hose, the ¾-inch and 1-inch being most in demand; sales of 1½-inch and 2-inch hose are less frequent. Small quantities of garden hose are in demand, the most common sizes being ½-inch, ⅝-inch, and ¾-inch. All these are kept in stock by the two large United States companies which have branch houses in Mexico and obtain the greater part of the business. Fire hose is sold occasionally. There is also a steady though not large demand for steam hose and pliable gasoline delivery hose covered with interwoven or braided cotton. At the present time there is little or no local production of any type of hose, but it is possible that the near future may see a beginning in the manufacture of cheap water hose. In 1931 the United States shipped to Mexico 338,114 pounds of all types valued at $108,883.

Packing.—All the standard types of steam and other packing are in use in Mexico. Well-known United States firms have branches or representatives. Exports from the United States to Mexico in 1931 amounted to 93,415 pounds valued at $40,367.

Footwear

Because of local production and tariff protection the importation of footwear is practically confined to quality lines which find a limited sale. For example, a locally made tennis shoe retails for 1.75 pesos as against 8.50 pesos for the imported article. The foreign shoe will probably keep its shape and last longer, but the difference in price obviously limits sales very definitely.

The exports from the United States to Mexico in 1931 consisted of 1,396 pairs of rubber boots ($4,427), 5,619 pairs of shoes ($2,955), and 5,228 pairs of canvas shoes with rubber soles ($4,329), the total value being $11,711.

Heels and soles are produced in Mexico, and a glance at the Mexican tariff will show the impracticability of obtaining any extensive business. The importations of heels in 1932 were valued at 747 pesos or about $275, while of rubber soles the value was 218 pesos or about $75. The Canadian product was imported in fair quantities up to the time of the last tariff increase a few years ago.

Elastic

Corset elastic is imported principally from the United States, Great Britain, Germany, Italy, and Canada. The principal widths are 8-inch, 10-inch, and 12-inch, with a small quantity of 14-inch; this applies to both cotton and artificial silk elastics, there being practically no importation of silk elastic. There is a small amount of this type of material manufactured in Mexico, and, while up to the present the domestic product has not attained the standard of the imported product, nevertheless indications are that the Mexican factories will gradually become successful in producing as good quality as is imported.

Elastics for garters, suspenders and boots are imported mainly from Germany, Italy, and England. Here again the demand is for cotton and artificial silk, with practically no sale of pure silk elastics. Up to the present there has been no local manufacture of this type of material, but it may be expected that the Mexican mills will eventually manufacture it.

There is a fair importation of uncovered rubber thread for local manufacture of elastic cloths. In the first six months of 1933 this amounted to nearly 5 tons, valued at 17,389 pesos, of which by far the greater part came from Germany, with lesser amounts from Italy and the United States.

Hard-Rubber Goods

There are fair quantities of hard-rubber goods imported into Mexico. Surgical sundries come mainly from Germany. Battery boxes for automobile and other uses are imported mainly from the United States by the Mexican manufacturers of batteries and by the large garages. It is a price market, and Canadian exporters in recent years have been unable to compete, although small orders have been obtained occasionally. In 1931 the United States exported to Mexico 51,213 pounds of electrical hard-rubber goods valued at $5,000, and $10,055 worth of other hard-rubber goods.

Sundries

Gloves.—The main sale of surgeons' gloves is in seconds, which are priced as low as $12 United States currency per gross. Because of this price, first-grade gloves find comparatively little sale. They are usually of Para rubber of a dark brown color, although some white latex seconds find a sale here at the same price. Gloves for household use have been introduced recently and are finding a fair sale through department and drug stores. About 50 per cent of the sales of these gloves are for those of light red color and the remainder for light green and light blue. There is also a small demand for linesmen's and acid-working gloves. In 1931 the United States shipped to Mexico 776 dozen pairs of gloves of all kinds valued at $2,730. That country has about two-thirds of the business, followed by Canada and Germany.

Bathing Caps.—In the plain thin type, sales depend entirely on the price. For fancy bathing caps sales depend mainly on the latest styles, and the first one to submit a novelty is usually assured of obtaining any available order. Orders are placed mainly during December, January, and February. Shipments from the United States in 1931 amounted to 604 dozen of a value of $1,429. That country enjoys about 80 per cent of the business.

Bathing Shoes.—There is a small demand for the type without heels. This is mainly a novelty market.

Rubber bathing suits have been introduced as a novelty but due to cost have found little sale so far.

Water animals of all kinds in the shapes of alligators, sharks, donkeys, swans, etc., find a fair sale. They should be sufficiently large to support a child in the water.

Belts.—There is a fair sale of rubber belts for bathing suits, but practically no sale of rubber belts for ordinary use.

Balloons.—The sale of balloons is almost entirely dependent on price. A standard price may be taken as 35 cents United States currency per gross for size 40, round. The main demand is for globe balloons, although there is a small market for the Zeppelin shape, sizes 55 and 65, and for balloons in the shape of animals, and for other novelty lines. Prices should be in United States currency, as the trade is accustomed to quotations in that form. Orders should practically always be cash against documents, because of the nature of the trade. The substantial volume of 18,992 gross valued at $16,067 was imported from the United States in 1931.

Toys.—Squeak novelties usually find a ready sale if they are cheap and attractive. All the standard rubber toys find a fair sale, as shown by the import total of 1932 which was valued at 66,445 pesos or about $25,000. The main supplier is the United States.

Teething rings of various forms obtain ready sale, especially if done up in cellophane in order to heighten the impression of cleanliness.

Nipples.—Germany practically controls the trade in this item because of low prices. The long type is most re-

(Continued on page 132)

Society for Testing Materials To Assemble at Atlantic City

Rubber Products and Textile Committees Schedule Important Programs for Thirty-Seventh Meeting

MEMBERS of the American Society for Testing Materials will hold their Thirty-seventh Annual Meeting at the Chalfonte-Haddon Hall, Atlantic City, N. J., from Monday, June 25th, to Friday, June 29th. An important series of technical papers and committee meetings will make the session one of the most interesting that the society has conducted.

Actual sessions will not begin until Tuesday, June 26th, and business meetings, election of officers, and a variety of committee reports will occupy that day and the day following. There will be no A. S. T. M. dinner this year; instead, Wednesday evening is to be devoted to a general session with the annual address by the president, followed by the annual dance and smoker.

Of greatest interest to rubber technologists will be the eleventh session on Thursday, June 28th, at 8 P. M. At this session reports and technical papers will be presented by Committee D-11 on Rubber Products, Committee D-13 on Textile Materials and Committee D-9 on Electrical Insulating Materials. In addition, there will be an informal report by the recently formed Sectional Committee on Electrical Insulating Materials. This group was organized this year under the procedure of the American Standards Association with the A. S. T. M. as sole sponsor and includes representatives of several technical bodies in its membership. H. L. Curtis, principal physicist of the Bureau of Standards, is chairman of this committee, and its membership includes E. D. Youmans, of the Okonite Company, as representative of A. S. T. M. Committee D-11 and J. M. Weaver, of Raybestos-Manhattan, Inc., as representative of Committee D-13.

Preprints of the papers and reports have been sent to interested members, and it is anticipated that there will be many important discussions. Those in charge of arrangements have indicated the importance of having all written discussion in the hands of the assistant secretary prior to the session at which it is to be presented.

A complete summary of the program scheduled for the eleventh session, together with abstracts of the technical papers on rubber technology, follows:

Thursday, June 28 8 P. M. Eleventh Session

Rubber, Textiles, Electrical Insulating Materials

Report of Committee D-11 on Rubber Products *H. A. Depew, Chairman.*

Presents new tentative methods for measurement of abrasion resistance of rubber, and method of test for compression set of rubber used for vibration absorption. Submits as information proposed specifications for rubber blankets for use around electrical apparatus. Recommends adoption as standard of tentative specifications for rubber pump valves, for cotton rubber-lined fire hose, and tentative method of test for hardness of rubber. Recommends revision of tentative specifications for friction tape for general use for electrical purposes, and for rubber insulating tape.

The Testing of Rubber and Rubber-Like Material for Oil Resistance. *O. M. Hayden, E. I. du Pont de Nemours and Company, Inc.*

Reviews the existing methods for testing the oil resistance of rubber and rubber-like compositions and discusses their shortcomings from the angle of evaluating their performance under actual service conditions. Emphasizes the fact that the most valuable test results are not capable of numerical expression but are dependent on manual tests and personal observations.

Materials to be Developed for Structural Engineering Models. *A. V. Karpov, Aluminum Company of America.*

Discusses the present tendencies toward increased use of engineering models in solving structural problems; specifications for materials for such models derived from the similarity conditions; materials presently available; work done in developing the rubber litharge compound used in the models of Calderwood and Boulder dams; and suggested research in rubber compounds.

The Testing of Raw Materials for Rubber Compounding. *B. S. Taylor, the B. F. Goodrich Company.*

Describes the properties sought and the standard tests used for the most important raw materials for use in rubber manufacture and the critical points to be considered in evaluating a raw material for rubber, which are: Ease of incorporation into rubber batches, effect on rate of vulcanization and aging, ability to reinforce or soften rubber compounds, effect in imparting special physical properties, and properties involving human factors—color, odor, toxicity, consistency. Describes a number of important impurities and explains their undesirability.

Report of Committee D-13 on Textile Materials. *H. J. Ball, Chairman.*

Presents interesting summary of activities of subcommittees on cotton, rayon, wool, felt, asbestos textiles, methods and machines, nomenclature, and bleaching, dyeing and finishing. Recommends adoption as standard of tentative specifications for 0.007-in. cotton cloth, and test for determining relative humidity; also the addition of test methods to specifications for hose ducks and belt ducks. Proposes adoption as standard of improved test for shrinkage in laundering of woven cotton cloth and its inclusion in the general textile test methods and in the specifications and tests for cotton fabrics. Presents revised plucking test in tentative specifications for holland cloth and revised definition for direction of twist. Reports specifications being completed for woolen yarns and development of revisions in tentative methods of testing grease wool and allied fibers for scoured content and in specifications for tolerances and test methods for rayon.

Report of Committee D-9 on Electrical Insulating Materials. *H. L. Curtis, Chairman.*

Effect of Moisture Content of Specimens on Results of Compressibility Test for Molded Sheet Materials. *W. A. Evans, Bell Telephone Laboratories, Inc.*

Methods of Measurement of Dielectric Characteristics at Commercial Frequencies. *P. H. Dike, Leeds & Northrup Co., W. B. Kouwenhoven, Johns Hopkins University, and J. B. McCurley, Johns Hopkins University.*

A Comparison of the Methods for Testing Insulating Materials for Power Factor and Dielectric Constant at 1000 Cycles. *W. B. Kouwenhoven, Johns Hopkins University, and L. W. Marks, General Electric Co.*

Informal Report of Sectional Committee on Electrical Insulating Materials. *H. L. Curtis, Chairman.*

Rubber Tires on Agricultural Machinery

By E. A. SILVER and G. W. McCUEN

Department of Agricultural Engineering, Ohio State University

ACCORDING to investigations conducted by the Agricultural Engineering Department of the Ohio Agricultural Experiment Station, low-pressure pneumatic tires have some very decided advantages over the steel wheel for agricultural machinery.

The success of these tires for tractor use can be attributed largely to the low air pressure and size of the casing. Twelve pounds of air pressure is all that is carried in most of these tires. This permits a large amount of flexing to conform to irregularities on the ground surface, and results in a uniform pressure and tractive effort over the entire area in contact. The contact area will vary from 80 to 170 square inches, depending on the size of the tire and the air pressure.

For some operations, such as plowing, weights are added to the wheels to secure greater traction. These weights can be readily removed when the tractor is to be used for roadwork or for other farm operations where the added weight is not necessary.

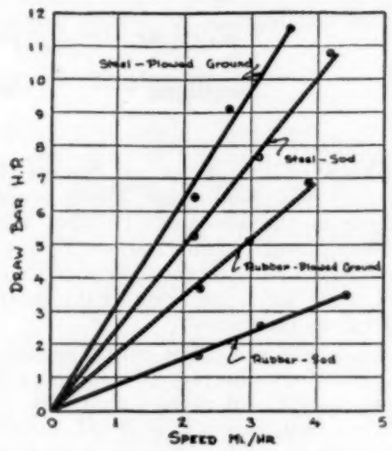
On plowed ground the rolling resistance of a tractor equipped with low-pressure rubber tires is only 54.1 per cent of that required by one equipped with steel wheels and lugs and at rates of travel of 2, 3 and 3½ miles per hour. On sod the rolling resistance of the tractor is 31.4 per cent of that required by the steel equipment.

This low rolling resistance contributes to higher efficiency of the tractor, both from the standpoint of fuel economy and drawbar pull. At normal loads, the tractor equipped with rubber tires required only from 75 to 91 per cent as much gasoline per drawbar horsepower as that used by the tractor equipped with steel wheels and lugs. Under good field conditions the tractor developed a greater effective drawbar pull when tested with rubber tires as compared to steel wheels with lugs.

The low-pressure tractor tires permitted operation at higher speeds. For the same effective drawbar pull, the average increase in speed in one series of tests was 36.7 per cent on sod and 25.9 per cent on plowed ground. A set of low-pressure tires with 670 hours of use have shown but little wear.

Although there are a few cases where rubber tires for tractors do not furnish adequate traction, they have many advantages over the steel wheel for farm use. First is the fact that the tractor can be used on the highways without fear of damaging the road surface. The task of removing and replacing the wheel lugs is therefore eliminated. With rubber-tire equipment a large part of the transportation work which was originally done by some other means, necessitating an additional investment, may be done with the tractor. Indications point that it will be possible to travel at least 25 miles per hour on paved highways. It is probable that in order to secure the most out of rubber tire equipment for tractors, the wagons and trailers used should also be so equipped in order to meet the higher speeds in transportation work. An exhaustive study on the draft of farm wagons or trailers was made in cooperation with farm machinery and rubber-tire manufacturers.

A farm wagon equipped with several types of wheels, both steel and rubber tire, was tested over five tractive surfaces: meadow, cultivated soil, cinder, gravel, and concrete roads. The rates of travel ranged from 2½ to 20 miles per hour, depending upon the tractive surface over which the load was transported. The net load varied from 2,000 to 5,000 pounds.



Rolling resistance of tractor equipped with steel wheels and spade lugs and with low-pressure rubber tires

Throughout all the tests the wagon hitch was adjusted vertically to compensate for the various heights of wheels and tractive surfaces. This was accomplished by making a series of hitch tests to determine the true line of draft of the wagon.

The cultivated soil required the greatest draft, followed in order by meadow, gravel, cinder, and concrete roads. Much depends, however, on the condition of gravel and cinder roads, with respect to the draft required. If the surface of a gravel road contains many loose pebbles, the draft of the steel wheel will mount very rapidly, while the low-pressure tire is not affected to any great extent.

On four of the five tractive surfaces, at all loads and rates of travel, the low-pressure pneumatic tire required less draft than any of the other types of wheels tested. On concrete road there was very little difference between the steel wheel and the low-pressure pneumatic tire. The greatest difference in draft between the low-pressure pneumatic tire and the steel wheel occurred on gravel roads, where, to move a gross load of 6,000 pounds at the rate of 2½ miles per hour, the low-pressure tire required an average of 58 pounds and the steel wheel 179 pounds pull—more than a 200 per cent increase.

The importance of wheel diameter depends largely upon the tractive surfaces over which the load is transported. In cultivated soil the smaller diameter wheels required from 1 to 16 per cent more draft, depending on the weight of the load transported and the rate of travel. On hard surfaced roads or even in the meadow, very little difference in draft was noted.

The width of rim seems to be a factor in cultivated soil only. With loads weighing from 5,000 to 6,000 pounds, the 6-inch rim gave a slight advantage. The 5-inch rim excelled at all loads weighing below 5,000 pounds. The soil, however, was in a fairly dry state and different results might be expected if it were wet. No advantage in draft existed with the narrow 3-inch rim.

Wheels equipped with roller bearings decreased the draft of the wagon decidedly.

Rubber Groups Hold Spring Meetings And Plan Summer Outings

New York Rubber Group

MORE than 100 members and guests of the New York Group, Rubber Division, American Chemical Society, attended a spring meeting on May 18 at the clubrooms of the Building Trades Employers Association, New York City. Three papers of unusual interest followed a dinner, and H. Walter Grote, of the United Carbon Company, entertained with a short exhibition of new card tricks.

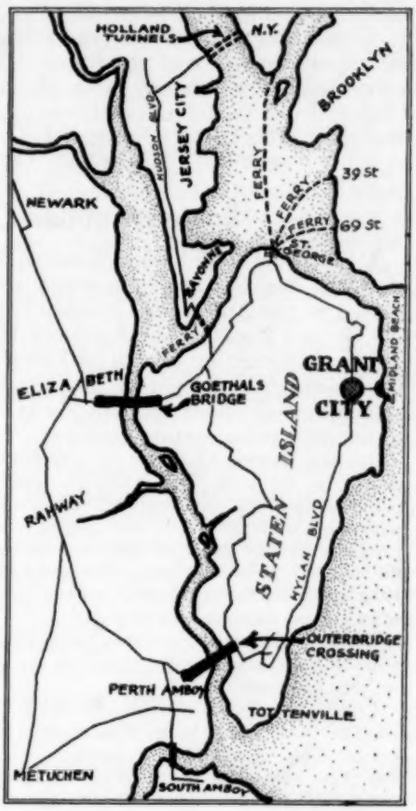
Speaking on the subject of "Estate and Native Rubber Contrasted," Dr. H. N. Whitford, of the Rubber Manufacturers Association, Inc., discussed the problems of the plantation industry. He estimated present potential annual production at 1,500,000 tons, of which more than 50 per cent could be produced on the 450,000 acres owned by 1,000,000 native Asiatics and the balance on the 350,000 acres owned by 2,000 European companies. While European plantations are each over 100 acres in size, the native estates average about 3 acres, he said. Dr. Whitford declared that the Europeans, who formerly spaced trees widely in the nature of an orchard, are now beginning to adapt to their own use the native method of heavier planting, which has been found to preserve the original soil by retaining something of the forest character of the land. He presented statistics of plantation yields and concluded that the European estate has a great advantage over the native in tapping costs, the latter requiring four times as many workers to get the same amount of rubber.

S. W. Nourse discussed "The Preparation of Lantern Slides," presenting examples of good and poor slides. Lawrence A. Hawkins, of the research laboratory, General Electric Company, talked on "Scientific Certainties and Economic Doubts," contrasting the development of science through experimentation with the needs of today in the world economic and political system.

Members of the New York Rubber Group will hold an all-day outing on Saturday, June 30th, at Semler's Park, Grant City, Staten Island, N. Y. Between luncheon and a shore dinner there will be opportunity for golf, swimming, baseball, horseshoe pitching, card games, novelty races, fly casting contests and other events. Peter P. Murawski is in charge of arrangements.

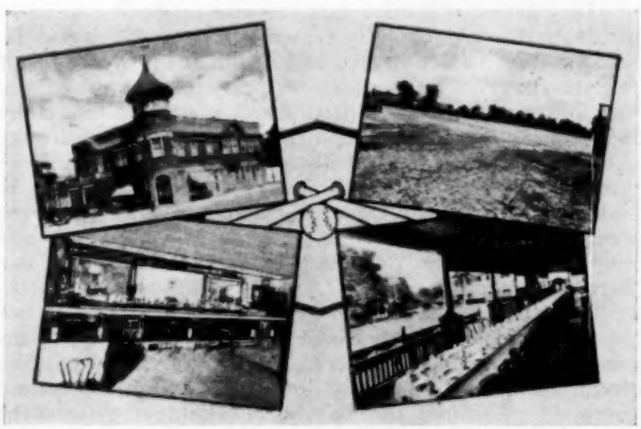
The location of Grant City is particularly convenient both to New York and Long Island and to all parts of New Jersey. It can be reached by electric car in fifteen minutes from the St. George ferry terminus, boats running regularly from South Ferry, Manhattan, and 39th and 69th Streets, Brooklyn. From any point in New Jersey, it can be quickly reached by car by means of any of the three bridges to Staten Island. The park is a short distance from Midland Beach, where swimming will be available to guests.

Tickets are $3.50, and reservations should be placed immediately with Bruce Silver, secretary-treasurer, care of New Jersey Zinc Company, 160 Front Street, New York City.



On to Grant City

The Staten Island resort chosen for the New York Group outing is just as convenient to New Jersey men as it is to the New Yorkers. A large-size reproduction of this map may be obtained by writing to the Editor of THE RUBBER AGE



Where New York Rubber Men Will Frolic

Views of Semler's Midland Park at Grant City, Staten Island, where members of the New York Rubber Group will gather on Saturday, June 30

Rhode Island Rubber Group

CHEMISTS and technologists in the state of Rhode Island have completed the formation of the Rhode Island Rubber Group, a new body at present unaffiliated with any other organization. An organization dinner-meeting was held April 27 at the Warren Hotel, Warren, R. I., at which a gathering of 95 technical men witnessed the showing of "The Romance of Rubber," a film of the United States Rubber Company, and "From Mine to Consumer," a film of the Anaconda Copper Company.

As officers of the group, the members elected Ernest G. Brown, National India Rubber Company, as chairman and L. D. Walker, Collyer Insulated Wire Company, as secre-

tary and treasurer. Those chosen to serve on the executive committee include Charles Berlow, American Wringer Company; J. D. Doyle, National India Rubber Company; Gladding Price, R. T. Vanderbilt Company; F. E. Rupert, Anaconda Wire & Cable Company; David C. Scott, Henry L. Scott Company; Samuel H. Tinsley, Respro, Inc., and E. G. Sturdevant, National India Rubber Company.

The next meeting of the Rhode Island Rubber Group is scheduled for Thursday, June 21, at the Pawtucket Golf Club and will include, in addition to a golf match, a dinner and short talks by D. C. Scott, M. Howell and G. E. Lang.

Boston Rubber Group

APPROXIMATELY 156 members and guests attended the regular spring meeting of the Boston Rubber Group of the American Chemical Society held June 8th in the Crystal Room of the Kenmore Hotel, Boston, Mass. A series of interesting papers on Latex and its wide use were discussed. A high light of this meeting was the display of a number of diversified products in which the use of Latex was an important feature.

Bradley Dewey, Chairman of the Section, presided and introduced the speakers. Dr. Willis A. Gibbons, U. S. Rubber Company, treated the fundamentals of latex and illustrated his talk with motion picture slides and graphs, which showed how latex is produced in the Far East and the methods employed in shipping the several forms of latex. He estimated that this territory in 1933 shipped 36,200,000 dry pounds of latex only, the United States quota being about 67%.

W. J. R. Hauser, Heveatex Corporation, spoke on the "Compounding of Latex" and summed up the great strides accomplished in this connection.

Charles R. Boggs, Simplex Wire & Cable Company, speaking on the "Coating of Wire With Latex," described briefly the process of applying the latex covering to wire. He mentioned that today these cables are used for various purposes including telephone work and different industrial uses and described the many advantages from the application of latex or Vultex.

Dr. R. J. Noble, Heveatex Corporation, talked on "Proofing with Latex," and traced the proofing of fabrics from the early stages to the present time, remarking that the success of the use of latex on any fabric depends to a great extent on how this particular fabric has been treated in the previous operations. He also touched on the equipment used for proofing, declaring that there are certain mechanical improvements which are necessary to apply on obsolete equipment to obtain best results.

Speaking on "Latex in Sealing Compositions," Kenneth Tator, Dewey & Almy Chemical Co., showed samples of ordinary tin cans in which latex plays an important part in the seaming operation and as a thin rubber gasket for sealing the cover. He claimed that latex has certain natural advantages which make it ideal as a gasket film, because of its resistance to atmospheric conditions. Therefore, it preserves foodstuffs and other commodities for a longer period.

In his second talk, Dr. Gibbons described the process of manufacturing rubber thread and illustrated this work by slide films. He also treated the use of latex in inner tubes and its incorporation with leather and paper by the beater process. Speaking on the application of latex as a backing for fibre carpets and rugs he referred to specific instances where latex used in this particular manner has actually lowered the cost of weaving certain fabrics.

M. O. Schur, Brown Company, speaking on the "Impregnation of Paper Fibres with Latex," recalled the past ten years' developments in this line and stated that they found different wood fibres when used with latex would produce different results. Another point they discovered was that in developing fibres of this nature it was important to be certain that they be adapted for running with leather machinery when used in shoes.

H. M. Spelman, Jr., Dewey & Almy Chemical Company, discussed in detail the advantages of latex shoe cements in comparison with other solvent cement.

H. J. Elwell, Vultex Chemical Company, spoke of dipped goods and described the properties of Vultex and its uses in the dipping of various articles, declaring that the simplicity of Vultex in processing dipped goods has its advantages in producing a better product at a lower cost.

John A. Lunn, Dewey & Almy Chemical Company, speaking on "Latex in Brake Lining" stated that latex is an ideal binder. He further described the three principal methods of construction, namely the wet paper, suction box process, and heat coagulation method.

The discussion on "Latex in Rubber Footwear" was presented by L. H. L'Hollier, Hood Rubber Company, who told of the many problems they encountered before finally developing today's models.

Akron Rubber Group

MEMBERS of the Akron Group will hold their Summer Outing on Friday, June 22, at the Fairlawn Height Golf Club, Akron, O. Prizes will be awarded and dinner will be served at the club house at 7 P. M. Admission to the golf contest involves only an entrance fee of 25 cents, while tickets for the dinner are $1.50.

Latex in the Textile Industry

(Continued from page 122)

for shoes, powder puffs, slippers, purses and similar applications. Some types of rayon have caused trouble on account of water marking. In general, however, suitable latex compounds may be obtained for even the most delicate crepes and satins. The adhesion of fabrics to paper, leather, metal, etc., by means of latex compounds is being extensively carried out.

The best type of artificial leather resembling natural leather in feel and appearance is made by first saturating double napped cotton sheeting with a suitable latex compound and drying. This dry saturated sheet is then coated on one side with a heavy latex coating by means of a doctor blade,—the fabric passing under the blade and over heated steam coils to evaporate the water and produce vulcanization. The fabric is then rolled up on itself at the far end of the dryer, two to four coats being necessary, after which the roll is taken back to the other end of the machine and given a similar treatment, thus reversing the direction of the application of the blade to the fabric.

By proper application of the latex coating, these fabrics may also be given a pyroxylin coating. Proper compounding of the latex will not cause discoloration to this easily discolored pyroxylin.

Hospital sheeting, etc. is made from cotton fabrics of suitable weight with or without previous impregnation and coated with a suitable compound in the above manner. Shower curtains with plain or printed sheeting are made similarly. Alternatively, the printing may be carried out subsequent to the coating operation. Various other types of materials of this class can be manufactured similarly and afterwards fabricated into a multiplicity of articles, such as holdalls, aprons, etc.

Many artificial leather factories are producing ordinary suede by the old naphtha cement process, which has the disadvantage of fire hazard and a short life for the resulting product. The method of manufacture consists in coating cotton fabrics with rubber cement, shaking cotton flock on the coated surface, then passing the fabric through a closed chamber fitted with an exhaust fan to pull off the loose fibre and stand the embedded fibres on end. By substituting a latex compound, this process can be carried out in the textile mill with slight modifications, eliminating fire hazard and producing a far superior article with better ageing properties.

There is no doubt that latex has taken a permanent hold in the textile industry, which has already developed into one of the biggest consumers. What might well be termed technical insularity, namely, the tendency of technical men to become isolated in their own individual grooves has been responsible for the somewhat slow pace at which latex-textile developments have taken place, but this is rapidly disappearing, which augurs well for the future in both fields of endeavor.

Darrow Criticizes Code Authority for Rubber Footwear Industry

CHARGING that the operation of that part of the rubber manufacturing industry code pertaining to the rubber footwear division "tends to oppress small enterprises and will result in a monopoly," the majority report of the National Recovery Review Board, headed by Clarence Darrow, made public late last month, calls for the appointment of a new divisional code authority and drastic revision of the code. Donald Richberg, counsel for the National Recovery Administration, answered the report by the counter charge that the "small enterprises" objecting to the code wish to lower their wage payments to labor and to undersell their competitors.

Hearings on the rubber footwear division had been held on the complaint of Eugene A. Kingman, counsel for the Phillips-Baker Rubber Company, La Crosse Rubber Mills Company, Goodyear Rubber Company and the Tyer Rubber Company, described in the report signed by Clarence Darrow as "small enterprises." Excerpts from the Darrow report to President Roosevelt follow:

"Small enterprises in this industry are oppressed under the code in ways that will result in a monopoly, if one be not already created. The industry is composed of 12 companies, of which two, with their affiliates, represent 65 per cent of the total production.

"This code was made by the large companies for their benefit, and for their benefit it is administered. It was drawn without regard to the wishes of the members of the industry as a whole, with conditions therein undesirable to the small enterprises. As a result, the smaller enterprises have refused to assent to the arrangement.

"The divisional authority, which has direct supervision over this branch of the rubber industry, is composed of three men that represent and have interests in the large companies. All powers concerning the industry are vested in the divisional authority, including the right to classify goods for sale and determine the discount to be allowed, and the minimum sale price.

"The divisional authority is using the compliance provisions of the code as a threat to coerce the small manufacturer into submission to code requirements injurious to the small enterprise, which conduct has been fostered by the administrator and the compliance director.

"The price fixing provision found in Article 3, Section 2, of the code will fix a minimum price for all manufacturers not in accordance with the cost of production, which will eventually put the small manufacturer out of business. These arrangements include discounts on large purchases that small manufacturers can not give, discount practices that the small manufacturer can not meet and other disadvantages.

"Price differentials established by the divisional authority are beneficial to large businesses only. Large volume purchases are given the better terms, which is more beneficial to the large manufacturers. Stabilization discounts —pre-season orders—are beneficial to the large manufacturers only because the small manufacturer can not give a guarantee against price decline. He must be prepared to meet competition by reduction in price and he does not have the capital and storage facilities to carry stocks.

"We recommend that the President direct the administrator to disapprove the election of the divisional authority of the rubber footwear division for the reason that it is not truly representative of the industry, and that it was selected by a group during a period when the membership in the code was highly undesirable to the small manufacturer because of certain provisions therein contained. We recommend that the present divisional authority be displaced and a new authority be created fairly representative of the small enterprise as of the large; that each member of the division shall be allowed to compute his cost pursuant to the system provided in Article VII-A, Chapter I, report such cost to an impartial agency selected by the divisional authority, and shall not thereafter sell any product other than factory damaged or obsolete goods for less than cost."

The NRA Reply by Richberg

In his reply to the Darrow report, Donald Richberg, NRA counsel, said, in part, "The board heard the complaint of four companies that were opposed to the code and found that they were 'small enterprises' which were being 'oppressed.' One of these is the fourth largest in this division of the industry and another is the Goodyear Rubber Company, which has a small volume of production in this particular line but is a very large enterprise in the field of rubber manufacture.

"Another one of the four 'small' companies employs nearly 1,000 persons, pays low wages and sells most of its output to a mail order house—thus underselling independent merchants. These 'small' concerns had all refused to sign the President's re-employment agreement."

It is believed that Mr. Richberg, in his reference to the Goodyear Rubber Company, Middletown, Conn., confused that concern with the Goodyear Tire & Rubber Company, Akron, O. There is not known to be any connection between the two firms.

High-Speed Trains for City Transit

(Continued from Page 124)

high speed, three-car articulated train has been signed and actual building will be undertaken at the Goodyear-Zeppelin fabrication plant late in July.

The Rail-Zeppelin, built to accommodate 164 passengers, will operate between Boston and Providence and maintain a 45-minute schedule over the route, which is 43.78 miles in length.

The latest in aerodynamic design and engined with two 400-horsepower Diesel Westinghouse oil burning motors, the rocket of the rails will accelerate from a standing start to 60 miles per hour in less than three minutes and will be capable of easily maintaining a sustained speed of 90 miles an hour.

The front and rear trucks of the 207-foot train will be electrically driven, the energy for the motors being supplied by generators connected directly to the powerful Diesel engines.

Goodyear was originally attracted to the project by the opportunity offered to develop new uses for rubber. Rubber flooring, seats of metal framework with rubber shock absorbers in place of conventional coil springs and rubber insulation which will contribute to sound-proofing and air conditioning of the train, are contemplated features. The articulated cars also will be connected with dustproof and flexible rubber diaphragms in place of the common accordion-type connections.

Weighing 240,000 pounds when empty, the three-car Rail-Zeppelin averages 80,000 pounds to the car, compared with 180,000 pounds for the average weight of a first-class conventional railroad passenger coach.

Built of light aluminum alloys that will stand three times the crash-impact of steel the same weight and sturdily reenforced longitudinally and transversely, the Rail-Zeppelin will have a high safety factor. Maximum strength with minimum weight has been the keynote of the train's design.

Dr. Karl Arnstein, designer of 70 Zeppelins, has spent

three years on perfection of the super-train, assisted by his staff of experts who helped him in his design and construction of the U.S.S. Macon, world's largest airship.

Describing the features of the Rail-Zeppelin, following completion of the contract negotiations by Harry Vissering, Goodyear-Zeppelin director, Dr. Arnstein pointed out that the contour of the train has been determined in conformity with the best aerodynamical practice. "The smooth outside surfaces are achieved," says Dr. Arnstein, "by the installation of flush windows, doors, vestibules and complete bottom covering.

"The perfectly smooth bottom will prevent suction of track ballast when the train is traveling at high speeds.

"Stability of the Goodyear-Zeppelin design of train while rounding curves at high speeds is due to two factors: first, because of its very low center of gravity; and second, because of its refined aerodynamic contour which reduces rolling or tipping, especially when adverse wind conditions prevail on track curves.

"The design includes a novel arrangement whereby the cars are suspended from the tracks by means of hydraulically controlled spring shock absorbers which will permit the truck wheels to always follow the rails and yet instantly absorb any unevenness of the track, thus greatly adding to the riding qualities of the cars.

"A shock test of one of these shock absorbers loaded to the weight it would be called upon to carry in actual service, showed that it eliminated rail joint bumps or shocks in the ratio of 400 to one," Dr. Arnstein said.

The first Rail-Zeppelin, which will be delivered to the New York, New Haven and Hartford within eight months from the date of signing the contract, will be thoroughly tested for ability to maintain high speed schedules on the Boston-Providence line and will be further tested for maximum speed which is expected to exceed 90 miles per hour.

Market for Rubber Goods in Mexico

(Continued from Page 126)

quired. There is also a demand for nipples which will fit on large-mouth bottles.

Babies' pants find a fair sale, but at the very low prices of $4 to $5 United States currency per gross. The type demanded is that in which the leg openings are across the corners. They are sold in assorted colors, mainly the light shades of yellow, and also blue and pink. The United States is the main supplier.

Rubber sheeting for hospitals, babies' beds, etc., is imported to a fair extent, as it is not manufactured in Mexico. The standard grades and colors are in use.

Hot water bottles of fair quality are made in Mexico, and because they can be sold quite cheaply there is very little demand for the imported article, even of superior quality. Total importations in 1932 were valued at 1,657 pesos or about $600.

Sponges and Sponge Floor Mats.—There is a fair demand for these items, which are imported mainly from Germany and the United States.

Syringes and accessories come mainly from Germany, which dominates the market. Lesser quantities are imported from the United States and France.

Play Balls.—The United States enjoys the greater part of the sales in Mexico. There is a very large demand for hollow balls inflated under high pressure, importations in 1932 being valued at 75,964 pesos or about $27,500, which figure probably includes tennis balls. The demand for sponge balls is not as great; a cheap type is manufactured within the country. Solid play balls, while imported to a fair extent, are not as popular as the pneumatic type.

Balls for sports.—There is a fair sale of practically all the standard makes of tennis balls, etc. Football is played fairly generally, and there is thus a demand for rubber bladders. Basketball is played only to a small degree.

Rubber bands find a ready sale at low prices competitive with the domestic product. The United States supplies part of the market. The quantity imported from that country in 1931 reached the considerable figure of 64,895 pounds, of a value of $24,935, but importations have probably declined since that date because of local production.

Erasers are sold in considerable quantities but at very low prices. There is a fair importation of cylindrical erasers for use in pencils. The United States sells a fair number, and a few have come from Canada from time to time. The former country sold 9,820 pounds valued at $4,710 to Mexico in 1931.

Rubberized Automobile Cloth.—This is a highly competitive field, and much of the business is done through the purchase of odd lots from the United States at relatively low prices, as exporters usually require minimum orders of two rolls of fifty yards each of each quality and color, which is often more than the average Mexican importer wishes to buy at any one time. In 1931 a total of 4,669 square yards to a value of $1,919 were imported from the United States, while other rubberized cloth from the same source amounted to 41,735 square yards valued at $17,162.

Brands

Generally speaking, it is preferable that imported goods bear foreign brands and foreign designs, as the retail customer often considers that an imported article is superior to the domestic product. Mexican designs tend to convey the idea that the articles are of local origin.

Method of Doing Business

So far as sundries are concerned, generally the best way of doing business in Mexico is to place the representation in the hands of a manufacturers' agent, who, with an abundant supply of samples and descriptive literature, can call on department, drug and other stores and take orders for direct importation. Some agents also carry small stocks to supply odd orders. When orders for sundries call for shipment by parcel post, even though the total weight may be 100 pounds or more, the goods must be sent by this method of transportation, the order being made up into a number of parcels of 20 pounds or less. The commission to the agent is usually about 10 per cent. The customary terms are 60 days sight draft, although large houses import on a c.o.d. basis and expect 2 per cent discount for cash. In certain lines it is advisable to demand sight draft and occasionally cash with order from small dealers.

For the large items, business may be carried on in the same way, although it is usually preferable to place the agency in the hands of a company with showrooms, a staff of salesmen and facilities for carrying a certain amount of stock. Particularly for conveyor systems it is usually most helpful, if not in fact absolutely necessary, that the representative in Mexico have a technical staff, or at least an experienced engineer, to assist in the installation of and to service conveyor systems of any size. It should be noted, however, that many large mining and transportation companies in Mexico have purchasing agents in the United States, Canada or elsewhere in which case orders are usually approved in such foreign offices. At the same time, of course, it is most advisable to place catalogues, price lists, and samples in the hands of the purchasing agent in Mexico who is often responsible for the recommendation to order.

REVIEW SHELF

• Monthly Review of New Books, Pamphlets, Company Catalogs, Service Bulletins, House Organs, etc., Pertinent to the Industry.

CHIMIE ET TECHNOLOGIE DU LATEX DE CAOUTCHOUC. By Georges Génin. Published by Revue Générale du Caoutchouc, 18 Rue Duphot, Paris, France. 392 pp. 1934. 90 francs.

The literature on the technology of rubber latex is materially enriched by this volume from the pen of M. Génin. In the first half of his study, the author describes the composition and properties of latex, its coagulation, preparation, concentration and shipment. In the second part, he discusses manufacturing methods, vulcanization, impregnation of fabrics, electrodeposition and the varied applications of latex. The book is well illustrated with 117 figures and contains a preface by Professor Emile Fleurent of the French Academy of Agriculture.

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RUBBER CEMENTS. Letter Circular LC 411. Published by the Bureau of Standards, Department of Commerce, Washington, D. C. 20 pp. 1934. For free distribution.

In answer to inquiries about the composition, preparation and uses of rubber cements, the Bureau of Standards has issued this letter circular, designed particularly for the individual, not expert in rubber technology, who wishes to employ a rubber cement for a certain purpose. The ingredients, the production and the uses of vulcanizing and non-vulcanizing rubber cements and of latex cements are treated in detail, with references to commercial sources of supply.

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1934 YEAR BOOK. Published by the Tire and Rim Association, Inc., 1401 Guarantee Title Building, Cleveland, O. 88 pp. 1934. $2.

Specifications for rims for passenger cars, trucks, buses, airplanes and tractors are included in the pages of this standard annual publication.

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RUBBER PRODUCING COMPANIES—1934. Published by the Financial Times, 72 Coleman Street, London, E. C. 2, England. 500 pp. 1934. 7s 6d.

All the salient details of practically every rubber plantation company are given in this volume, which well justifies its sub-title of the "Official Guide for Investors in Rubber Shares." It is compiled by the Mincing Lane Tea and Rubber Share Brokers' Association, Ltd.

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SEVENTEENTH REPORT ON NATIVE RUBBER CULTIVATION. Published by the Bureau of Agricultural Economics, Batavia, Java. 14 pp. 1934.

"The year 1933 has been one of the most remarkable years in the history of native rubber cultivation in Netherlands India," conclude the authors of this quarterly review. How sharply the export of native rubber from the Dutch East Indies reacted upon last year's price increase in the community is shown by the fact that shipments in the fourth quarter were three times those of first three months of the year.

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MISCELLANEOUS TUBING AND EXTRUDED COMPOUNDS. Laboratory Report No. 174. Published by Rubber Chemicals Division, E. I. du Pont de Nemours & Company, Wilmington, Del. 8 pp. 1934. For free distribution.

The successful manufacture of extruded articles such as tubing and gasket materials depends to a large extent upon the proper choice of accelerator. Tubing stocks are often highly loaded with clay to give the required firmness, and it is necessary to choose an accelerator which functions well with this material. Data are given on compounds for syringe and bath spray tubing, windshield wiper tubing, windlace or upholstery tubing, and miscellaneous tubing and gasket stocks.

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EYE PROTECTION IN INDUSTRY. By Louis Resnick. Published by the National Society for the Prevention of Blindness, Inc., 50 West 50th Street, New York City. 8 pp. 1934. 5 cents.

Eye hazards of industrial occupations have come to be among the most serious of all causes of blindness. Suggestions are offered to the end that these hazards may be eliminated or their effects counteracted, and the pamphlet is concluded with a "self-appraisal" questionnaire form for safety engineers and other industrial executives.

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TAG THERMOSTATIC STEAM TRAPS. Published by the C. J. Tagliabue Manufacturing Company, Park and Nostrand Avenues, Brooklyn, N. Y. 4 pp. 1934. For free distribution.

Steam traps of this type are employed in platen presses, kettles, steam separators, unit heaters and other applications. Their characteristics are described in detail in this circular.

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WAX EMULSIONS FOR THE RUBBER INDUSTRY. Published by the Wilbur White Chemical Company, Oswego, N. Y. 8 pp. 1934. For free distribution.

Certain problems arising in the manufacture of rubber articles, such as gloves, hot water bags and bathing caps, have been successfully solved by the use of Carnauba wax emulsions. Any tendency of such articles to become tacky is largely overcome by treating the finished products with a dilute Carnauba emulsion. The appearance of molded articles has also been improved, and certain formulae have been particularly effective with automobile tires.

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HAWLEY CONVERSION TABLES. Published by H. W. Hawley, 692 Ridge Street, Newark, N. J. 22 pp. 1934. 50 cents.

Intended particularly for the use of those engaged in foreign commerce, this manual also contains a variety of general information. Its chief features are the conversion tables for American and British currency, kilograms and pounds, and long tons and pounds.

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VANDERBILT NEWS, Vol. 4, No. 3. May-June, 1934, issue. Published by the R. T. Vanderbilt Company, Inc., 230 Park Avenue, New York City. 24 pp. 1934. For free distribution.

In this number all the rubber materials of the company are brought together, after the fashion of a résumé. It is intended to give compounders a compact survey of compounding materials, with which practically any type of rubber compound can be built.

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FOREIGN COMMERCE YEARBOOK. Published by the Superintendent of Documents, Government Printing Office, Washington, D. C. 355 pp. 1934. $1.

This volume continues the series of annual compilations of world economic statistics prepared by the Bureau of Foreign and Domestic Commerce. It contains brief statistical reviews of 66 foreign countries, including latest available data on production, transportation, labor conditions and currency. It also shows total exports and imports of each country over a period of several years; exports and imports by principal commodities and countries, and trade with the United States; comparative world statistics, by countries, on areas, population, agriculture, manufacturing, transportation, communications and finance.

Editorial Comment

Rubber Factory Management and Labor

RELATIONS between management and labor in the domestic rubber manufacturing industry have always been happily satisfactory, particularly in the great tire plants of the Akron area. Management has shown a willingness to go more than part way in sharing income with employes, even when dividends were not being paid and funded obligations were selling at a fraction of their par value.

Recent wage increases have established Akron as the highest wage industrial city in the United States, well above Detroit, which is in second place. Average hourly earnings at the major factories are now higher than they were during the peak years of 1928 and 1929. Vacation policies have been adopted that are liberal in comparison with other industrial centres.

The movement for the sharing of work and spreading of employment virtually started in Akron, long before the advent of NRA. It was in the Hoover administration that Akron leaders in the rubber industry were preaching the six-hour day as a means of keeping everybody employed. This "spread the work" movement probably operated to keep many rubber workers in Akron who might otherwise have drifted away. In Detroit it was discovered the ablest very often left the city first, and the manufacturer who could keep all his men employed at some income had the hope of being able to increase his employment faster upon recovery than one who did not.

Of course, the business of rubber manufacturing is largely seasonal. Tire demands are concentrated mostly in the spring of the year, and it is practically impossible to guarantee that every worker who is employed at the peak of production can also be placed in the low ebb of winter under any system of division of employment. Under the circumstances, however, rubber manufacturers have been considerate and humane in their attitude toward employes, even at the expense of security holders.

Nevertheless, reports are being circulated to the effect that serious labor trouble threatens the rubber industry. It has been bracketed in headlines with the steel and mining fields. So conservative a paper as the New York *Journal of Commerce* says, "Akron will be the scene of the next major labor dispute."

Frankly, we do not anticipate any such important disagreement in the nation's rubber capital. Rubber workers have been organized by the American Federation of Labor, which is fundamentally not radical and which has a keen appreciation of the employers' viewpoint. Their leaders are intelligent enough to understand the futility of a walkout when the industry has a six-months supply of tires on hand.

In accordance with the custom of labor unions, demands have been made far exceeding anything they might hope to realize so that in any compromise they will gain at least some tangible improvement. It is likely that these unions may win partial recognition, with some concessions, although far short of all they demand. But the danger of any serious struggle involving a general tie-up of the industry appears to be remote.

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Regulation of Raw Materials

CONTRARY to general opinion among rubber producing interests, there has arisen no united objection on the part of American manufacturers to the new rubber restriction plan. This is probably just as well, for even the expressions by one or two representatives of the American industry have promptly drawn sharp references to our own national administration's policy of creating "prosperity through scarcity."

"The whole world is moving towards a planned economy," says "Candidus" in the London *Investors' Chronicle*. "In spite of the American propaganda against the international tin and rubber restriction schemes, the United States themselves are the greatest believers in production control. Ask President Roosevelt! Ask Mr. Wallace, Secretary of Agriculture, and Mr. Ickes, Secretary of the Interior and Administrator of the Oil Code! Feverish efforts are being made to stabilize the American cotton and oil industries by means of Federal restriction schemes, and the only solution of the wheat problem—unless nature solves it with drought—is a planned control of production. President Roosevelt has probably learned by this time that planning does far more for commodity prices than tinkering with the dollar."

And "Toreador," in the *New Statesman*, says, "Of course, the American consumer will be annoyed, but he can not complain if foreign producers endeavor to practice the gospel preached by all American Secretaries of State in cases of 'burdensome surpluses'—that of 'regulation of supply and expansion of the market'—to quote Mr. Cordell Hull. If the rubber producers can not expand the American market, which is the President's job, they can at any rate regulate the supply. And if they can not reach the President's ideal of the 1926 price level, which means 4s 6d rubber, they would be grateful for a permanently higher level than the 1933 average of 3¼d per lb."

In view of the expressed economic aims of our own government, therefore, it would hardly be politic for members of the American industry to criticise the efforts of other producers to realize an equitable price for their product. At least we should wait until it actually appears likely that we may be hurt. And thus far it would seem that the carefully selected International Rubber Regulation Committee has no intention of permitting any speculative orgy in the commodity such as prevailed eight and nine years ago.

CURRENT • NEWS
of the Rubber Industry

JUNE, 1934

Rubber Companies Expand Their Exhibits At Century of Progress Fair in Chicago

Firestone Nearly Doubles Size of Fair Buildings—Goodyear to Show Two Blimps—Tew and O'Neil Attend General Motors' Conference of Business Leaders

THE opening of the 1934 edition of the Century of Progress exposition at Chicago on May 26 found the rubber manufacturing industry even more fully represented than last year. In addition to exhibitions by major rubber companies, the industry's products and processes are featured in the displays of motor car manufacturers and producers of plant equipment.

The Firestone Tire & Rubber Company has practically doubled the size of its exhibit, and the Goodyear Tire & Rubber Company is showing two of its fleet of small airships. On May 25, several hundred leaders of science and industry were invited by Alfred P. Sloan, Jr., president of the General Motors Corporation, to participate in a "Preview of Industrial Progress in the Next Century." Among those taking part were James D. Tew, president of the B. F. Goodrich Company, and William O'Neil, president of the General Tire & Rubber Company.

Expansion of the Goodyear display included the enlargement of the airship landing field and the construction of a grandstand to accommodate 750 persons. An open-air theatre and a recreation building have also been erected. Two Goodyear blimps, the Reliance and the Puritan, will be on hand throughout the summer.

The exhibit of the Westinghouse Electric & Manufacturing Company in the southern hall of the Hall of Electricity presents a complete view of the march of electrical progress. Among its "work-it-yourself" exhibits is a rubber mill with a safety stop device powered by a 300 hp. synchronous motor. The visitor can start this by pushing one button and, after it has come up to speed, can push a second button which will stop it from full speed in less than one second. This 300 hp. motor is the largest revolving machine in the exhibit which the visitor to the fair can personally manipulate.

The Westinghouse exhibit also includes a scale model of the dirigible Macon, which soars overhead in a long oval path. The visitor can stop or start it at will by speaking the necessary words of command in a nearby microphone on the floor. The model of the dirigible is shown by courtesy of the Goodyear-Zeppelin Corporation, whose property it is.

The Firestone Factory and Exhibition Building, which together with the Firestone Scientific rubber exhibit in the Hall of Science represents the rubber industry at "A Century of Progress," has been almost doubled in size. The many new exhibits are both interesting and instructive.

Visitors approaching the building on Lief Erickson Drive will first see the magnificent Firestone Singing Color Fountain, the only one of its kind in the world, with additional sprays this year, bringing out more amazing coloring to the tones of the music.

Immediately inside both entrances the spectators will see a replica of the Firestone Rubber Plantations in Liberia, Africa, showing tapping of the trees, the latex dripping, and natives bringing it into the preparation mill. Next the visitor will see the processes of rubber treatment, including coagulation, sheeting, smoking and baling. Sounds are heard typical of the African plantations, including bird calls and native tom-toms. An attendant will describe interesting facts of African life and the plantations.

Scientific Rubber Exhibits

Displays of scientific phenomena of rubber, including coagulation, vulcanization and the Brownian movement of latex, come to view next and then the actual tire factory with its gleaming machinery of the newest type, turning out seventy tires a day from the efficient production line. Low-pressure tires will be manufactured this year.

Continuing along the production line, after seeing the tires built from the raw material to the finished product and wrapped for shipping, the visitor will see displays portraying the development of tires—the solid carriage tire, the non-skid tread, the balloon tire and the air balloon tire. A series of dynamic product exhibits presents a beautiful and most interesting display. Whirling discs will show how Firestone Aquapruf brake lining brings cars to a stop more quickly and smoothly than old types. A huge Firestone battery will open to show how a battery is constructed and the results of the new Firestone Allrubber separator. A typical product from Firestone mechanical goods division, the vibration dampener, will show how noise and vibration are being outlawed, not only for industries and automobiles, but for household appliances. A huge Firestone spark plug unfolds secrets of its construction and new scientific advancements. Climaxing the product exhibits is an ultra-modern one-stop Firestone Ser-

The offices of the building will be on the first floor where dealers from all parts of the country will register before visiting the lounge rooms above, and balconies overlooking the Singing Color Fountains or looking out across the entire Fair grounds. In the gardens will be exhibits in glass enclosures. One of these includes cars that have won the Indianapolis races. Another will consist of an endless parade of Firestone automotive products, upon which an "electric eye" controls spotlights. Another will show a replica of a Washington Electric Railway Company bus, making trips to the moon, illustrating the fact that this fleet has traveled the equivalent of 23 round trips to the moon without a single tire failure.

The tractor tire display will include tractors and farm attachments. There will be an interesting exhibit of the lines manufactured at Firestone Steel Products Company, including rims and wheels.

The gardens will be beautifully landscaped and there will be plenty of benches.

To Use Rubber Boat in Tour through Europe

Professor Richard C. Borden, head of the department of public speaking at New York University, and Mrs. Borden left New York June 6 for a three-month trip through Europe in a collapsible rubber boat. From Rotterdam they will travel through Germany and Central Europe to the Black Sea and the Dardanelles, cross the Aegean Sea and continue through the Corinth Canal to the Ionian Sea and along the Albanian and Dalmatian coasts to Venice.

Described as an "unsinkable flatboat," their craft weighs about 40 pounds and is roomy enough to carry air mattresses and complete camping equipment. Last year Professor and Mrs. Borden traveled in the same manner through the Adriatic and down the Danube.

CONSUMPTION IN APRIL TOTALLED 44,947 TONS

Consumption of crude rubber by manufacturers in the United States for the month of April amounted to 44,947 long tons, which compares with 47,097 (revised) long tons for March. April consumption shows a decrease of 4.6 per cent under March, but was 73.4 per cent above April a year ago, according to statistics released by the Rubber Manufacturers Association. Consumption for April, 1933, was reported to be 25,928 (revised) long tons.

Imports of crude rubber for April were 45,662 long tons, an increase of 2.4 per cent over March and 134.7 per cent above April, 1933.

The association estimates total domestic stocks of crude rubber on hand April 30th, at 351,981 long tons, which compares with March 31st, stocks of 353,242 long tons. April stocks show practically no change as compared with March, but were 7.9 per cent below stocks of April 30, 1933.

The participants in the statistical compilation report 56,251 long tons of crude rubber afloat for the United States ports on April 30th, compared with 54,722 long tons afloat on March 31st, this year, and 30,745 long tons afloat on April 30, 1933.

April reclaimed rubber consumption is estimated to be 9,387 long tons, production 10,185 long tons, stocks on hand April 30th, 22,033 long tons.

CANADA IMPORTED LESS CRUDE RUBBER IN 1933

Canada, in 1933, imported 43,281,821 pounds of crude rubber valued at $2,739,-305 (Canadian), as compared with 46,853,-830 pounds valued at $2,136,389 (Canadian) in 1932, a decline of 7.6 per cent in quantity but an advance of 27.7 per cent in value.

The peak year for rubber imports was 1929, when 79,414,649 pounds were shipped in, since then the trade has declined each year until Canada as a supplier of rubber manufacturers on world markets has dropped successively from fifth place in 1929 to sixth in 1930, to seventh in 1931 and 1932, and possibly to eighth in 1933, if the statistics for Italy, not yet available, show that country to have advanced over Canada. Preceding these countries, in order of importance as manufacturers of rubber in 1933, came the United Sates, United Kingdom, Japan, France, Germany, and Russia.

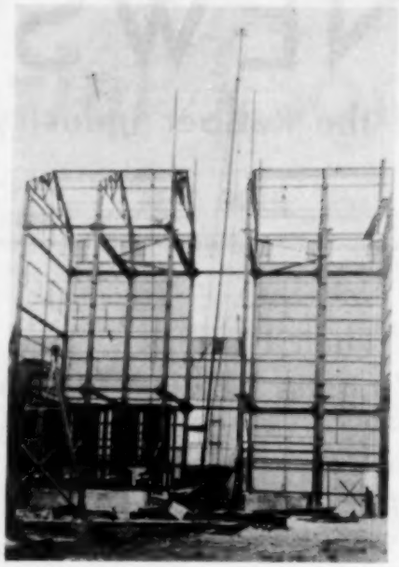
Air Mail Service to Singapore

Air mail service from London to Singapore is now available through the lines of Imperial Airways, Ltd., and mail matter can be sent from New York in the ordinary way, the charge being 30 cents per half-ounce in addition to the regular postage. A special air mail sticker should be obtained from the Post Office. Air express service is also available.

Rubber Factory Fatalities

Accidents in rubber manufacturing plants in Ohio last year caused 17 deaths, according to official state reports released last month. The deaths were among 2,848 occupational injury claims filed during the year.

Spheron Black Production Units



The framework of two new buildings, especially designed by Godfrey L. Cabot, Inc., for the manufacture of Spheron, a carbon black in a new spherical, dustless form, at Elfco, Tex. Each building will have a capacity of 40,000 pounds a day, bringing the total production of Spheron to more than 3,000,000 pounds a month.

Budget for Rainwear Labels

The National Recovery Administration last month received from the divisional code authority for the rainwear division of the rubber manufacturing industry an application for approval of its proposed budget of expenses and regulations pertaining to the issuance of NRA labels. The total amount of the proposed budget is $56,278, including the sum of $46,050, which is estimated to cover expenses for the fiscal year beginning April 1, 1934. The basis of contribution by members of the industry is a charge of $10 per thousand for approved NRA labels, estimated to yield the sum of $60,000 yearly.

LABOR BOARD RULES IN EAGLE RUBBER STRIKE

The National Labor Board on May 17 announced a ruling in the dispute between the Eagle Rubber Company, Ashland, and the United Rubber Workers Federal Labor Union 18683, involving alleged refusal of the company to bargain collectively and to adhere to a decision of the Cleveland Regional Labor Board in the matter.

Alleged discriminatory discharge of several union employees led to a strike on November 29, which tied the plant up almost completely for a day or two. Upon resumption of activities because of the spring seasonal rise in business, several employees were reinstated, as ruled by the Regional Labor Board hearing in December, but about 53 employees remained on strike.

Cessation of the strike and reinstatement of union members laid off prior to the strike was ordered by the Board in its decision. Hearing on the case was held April 5.

MARCH TIRE PRODUCTION 154% HIGHER THAN 1933

Shipments of pneumatic casings for the month of March amounted to 4,222,962 casings, an increase of 28.6 per cent over February and 101.9 per cent above March, 1933, according to statistics released by the Rubber Manufacturers Association, Inc.

This organization reports production of pneumatic casings for March to be 5,180,-122 casings, an increase of 19.5 per cent above February and 154.2 per cent above March, 1933.

Pneumatic casings in the hands of manufacturers March 31st amounted to 11,650,661 units, an increase of 8.6 per cent above February 28, 1934, stocks and 59.8 per cent above stocks March 31, 1933.

The actual figures are as follows:

	Pneumatic Casings		
	Shipments	*Production*	*Inventory*
Mar., 1934..	4,222,962	5,180,122	11,650,661
Feb., 1934..	3,284,910	4,335,092	10,725,032
Mar., 1933..	2,091,878	2,037,899	7,289,976

WORLD TRADE IN TIRES INCREASED 9 PER CENT

International trade in pneumatic automobile tires amounted to 5,607,000 in 1933, compared with 5,151,000 in 1932, an increase of 9 per cent, according to an estimate prepared by the Leather-Rubber-Shoe division of the Bureau of Foreign and Domestic Commerce from official trade reports. United States tire exports increased 13 per cent from 1,092,-000 in 1932 to 1,236,000 in 1923.

Tire exports during 1933 by principal manufacturing countries with comparative statistics for 1932, follow: United Kingdom, 1,589,000 against 1,409,000; United States, 1,236,000 against 1,092,000; France, 780,000 against 885,000; Belgium, 602,000 against 496,000; Italy, 578,000 against 627,000; Canada, 486,000 against 412,000; Japan, 207,000 against 84,000, and Germany 129,000 against 146,000.

The greatest percentage increase registered in 1933 over 1932 was that of 126 per cent for Japan; Belgium was second with a 21 per cent increase; Canada, third with 18 per cent, and the United States and United Kingdom each showed an increase of 13 per cent. Losses in tire exports in 1933 were registered by France and Germany with 12 per cent each and by Italy with 8 per cent.

Baer on Goodrich Broadcast

Max Baer, challenger for the world's heavyweight boxing championship, has been featured on a thrice-weekly series of radio programs for the B. F. Goodrich Company during the past month. In addition to these programs over the National Broadcasting Company's Blue Network, the Goodrich company was to sponsor the radio broadcast of the championship fight on June 14.

Roger S. Firestone, son of Harvey S. Firestone, chairman of the Firestone Tire & Rubber Company, has been elected to membership in Sigma Xi, national scientific honor society, at Princeton University.

Mechanical Rubber Goods Manufacturers Argue Customer Classification and Terms of Sale

Dollinson of Republic Submits Opposition Brief and Contests Legality of Action—Controversy over Jobber and Mill Supply House Definitions.

WASHINGTON, D. C.

GROUP customer classification definitions and maximum terms of sale applicable to the Mechanical Rubber Goods Division of the Rubber Goods Manufacturing Industry have been submitted to the National Recovery Administrator for his approval. These classifications and terms were presented to the Administrator by the Divisional Code Authority in accordance with the Code of Fair Competition of the Rubber Goods Manufacturing Industry, at a public hearing held here on June 1.

The maximum terms of sale set forth by the Mechanical Division Code Authority, according to the statement of C. D. Garretson who spoke for that body at the hearing, are essentially those which have been in effect in the Industry for years past. According to A. D. Kunze, secretary of the Divisional Authority, who also appeared at the hearing, they represent the recommendations, which were substantially approved by the Authority, of the various sub-divisions and groups comprising the Mechanical Rubber Goods Division.

Subject to the approval of the Administrator, the Divisional Authority has established that a consignment of goods or a ledger balance, or free balance to any customer in any class of trade shall be charged for at 5 per cent interest. This interest is to be computed and paid quarterly on a pro rata basis. In the case of a consigned stock, the manufacturer's selling price on the goods to the customer involved shall be the basis on which the interest will be computed and in the case of a free or ledger balance, the actual balance at the end of each quarter will be the amount on which the interest will be computed.

Dollinson Voices Protest

O. S. Dollinson, vice-president of the Republic Rubber Company, Youngstown, O., contested the legality of this measure and urged that it had not been presented for the approval of the industry. A. L. Kress, Deputy Administrator, who presided at the hearing, pointed out, however, that it was not incumbent upon the Divisional Authority to present a measure to the industry as a whole before presenting it to the Administrator for his approval. He pointed out that Article 5, Section 1, of the code only states that "Uniform terms of sale shall be established by the Divisional Authority, subject to the approval of the Administrator." Dollinson also presented a brief which he stated had been hastily drawn up by his company due to the fact that notice of the hearing had reached them at such a late date. In this brief, objection was made to other details of the schedule drawn up by the Divisional Code Authority.

The maximum terms of sale as presented for the approval of the Administrator also provided that all quotations, orders, contracts, or other commitments, unless otherwise provided for, shall be subject to quarterly price revision, i.e., as of Jan. 1st, April 1st, July 1st, and October 1st, of each year.

A brief objecting to this provision was received by the Administrator from the Mail Order Association of America. This organization contended that insofar as a mail order house is obliged to make up and print catalogues, it is essential that they be able to determine prices further in advance than this provision would allow for. The Administrator made this brief part of the record and this point will be considered by the Administration before its approval is given to the schedule.

Maximum terms of sales involving discounts and freight charges for the various groups and sub-divisions of the Mechanical Rubber Goods Division were also set forth in the schedule.

Definitions of Classifications

The definitions of classifications of Buyers presented by the Divisional Authority for the approval of the Administrator, were in three sets, i.e., No. 1—Definitions covering all products except Tape and Jar Rings; No. 2—Definitions covering Tape only; and No. 3—Definitions covering Jar Rings only.

These definitions were originally distributed to the Industry last January, and a mail vote was taken on them. At a meeting of the Divisional Authority in February, the comments and recommendations gained as a result of the mail vote were considered by the Authority, and the definitions were again presented to the Industry for a vote.

The most controversial of these definitions was that dealing with jobbers and mill supply houses. This classification stands defined as a concern that sells to industrial users and other trade outlets. The Divisional Authority, however, presented an amendment to this which would militate against those large industrial consumers who have transferred their purchasing departments to separate companies, set up as jobbers, in order to take advantage of the lower prices given to jobbers.

This practice, according to Mr. Garretson, of the Divisional Authority, works an undeniable hardship on the smaller industrial consumer who is forced to pay the additional price charged by the jobber.

A syndicate buyer is defined in the schedule as an institution generally known as a buying office, that primarily works for its clients on a commission or retainer basis or both, in addition to and not in place of the client's own buying organization.

A brief setting forth objections to this definition was received by the Administrator from the Biddle Purchasing Company, of New York City. This brief was filed on behalf of the Biddle Purchasing Company, R. K. Carter & Company, and Oliver Bros., Inc., all of New York City.

Attending the hearing in an advisory capacity for the Administration were: A. F. Bassett of the Industrial Advisory Board; W. F. Ham, Labor Advisor; E. L. Culver, Consumer's Counsel; C. H. Pearce of the Research and Planning Board; and Mortimer Weinbach, legal advisor.

After all those who had signified their intention had been heard, the hearing was recessed until June 11, during which time the Administrator and his advisors will consider all of the arguments and the briefs which have been presented.

BROADENED DEMAND SEEN FOR ALL RUBBER GOODS

The recovery of the rubber goods industry, which started shortly after the close of the banking moratorium in March, 1933, has been gathering momentum steadily, in keeping with the expansion of general business, states a report issued June 2 by Dun & Bradstreet, Inc. "While the strong impetus given to the output of tires by the revival in the automobile industry has formed the outstanding achievement," the report says, "the other divisions, comprising footwear, drug sundries, and hose and belting also have participated in the advance.

"There has been a gradual expansion since the first of the year in the plants producing summer sports goods, but the output of staples in footwear, drug sundries, and hose and belting is slightly below the first quarter's rate. Shipments of rubber footwear and clothing during the first four months of 1934 were 40 to 45 per cent larger than in 1933, while orders for fall delivery have increased 50 to 75 per cent.

"Materials used in building, packing, druggists' supplies, garden hose, footwear and bathing sundries are among the best sellers at present, although a number of miscellaneous articles are moving well, bringing the general retail sales total for the first five months of the year around 40 per cent larger than for the comparative 1933 period. Sales of mechanical goods increased 45 per cent and were 65 per cent ahead of 1932, when industrial operations were at their lowest in more than a decade."

The report estimates manufacturers' tire stocks at the end of May at 13,000,000 casings and dealers' stocks at nearly 5,000,000, equalling in total a six months' supply. "This large inventory," it states, "is expected to prove an important factor in the attitude of manufacturers toward the demands of labor."

Strike Settled at Mansfield

Striking employes of the Mansfield Tire & Rubber Company, Mansfield, O., who walked out May 7, returned to work on May 21 under terms of an agreement drawn by N. S. Clark, of the regional labor board at Cleveland, and approved by P. H. Ober, vice-president and general manager of the company. About 700 men had been on strike.

Auto Fabric Specifications

A hearing was scheduled to be conducted on June 14 at the Mayflower Hotel, Washington, D. C., on proposed standard specifications and inspection rules for the automobile fabrics, proofing and backing division of the rubber manufacturing industry.

EDWIN J. WARD has resigned as art director for the B. F. Goodrich Company to join a commercial art studio at Cleveland, O. ROY T. GRIFFITHS has been named acting art director for the company.

SEIBERLING SALES FORCE INCREASED 36 PER CENT

Since the beginning of the year the Seiberling Rubber Company, Barberton, O., has increased its sales force 36 per cent. Territories are now being more intensively covered, and a new incentive compensation system has been adopted to stimulate the activity of salesmen.

J. L. Cochrun, assistant sales manager, describes the adjustment in compensation methods by saying, "Six months ago we took our first steps to inaugurate what is really a profit-sharing plan with our field sales organization. This percentage of net profit is to be given to the men as a bonus at the end of our fiscal year. We consider this as one of the most forward steps we have ever made in a remuneration program, as it is accomplishing real results."

Even with a reduced sales force, Seiberling never abandoned any territory, but the territories of the remaining men had to be expanded and could not be covered so intensively as previously. With the increase it has made in its field sales organization, the old men have gone back to practically the same territories they formerly covered, while the new men have taken over the remaining territory.

Sales territory changes have closely followed business revival in specific sections. In the last six months the company found that the midwest agricultural section was coming to the front rapidly. Therefore, it doubled its field sales organization in that section and is planning on an even greater expansion. In New England, the revival of business has been such that the company has trebled its field organization.

HEARING IN TWEMO MOLD SUIT AGAINST GOODYEAR

Hearings were started May 21 in the United States district court in Cleveland O., in the suit of the Twemo Corporation against the Goodyear Tire & Rubber Company, alleging infringement of the Fairchild patents on tube molds. The machine involved in the suit is used by the Goodyear company and was manufactured by the National Rubber Machinery Company.

Both sides have been ordered by Referee Carl D. Trebolin to file briefs before July 1. The papers in the suit were originally filed in 1929.

PRODUCTION IS RESUMED AT KELLY-SPRINGFIELD

All employes of the Kelly-Springfield Tire Company, furloughed for ten days, were under orders to report June 6 to resume work. The plant at Cumberland, Md., was closed down for inventory and adjustments, officials said.

It was rumored that the rubber workers' union, recently organized, would in the near future demand a closed shop, union recognition and a minimum wage scale. The company has on hand a stock sufficient to meet normal trade demand for some time, it is said.

Rubber Tree Disease Feared

A writer in the *Times of Ceylon* draws attention to the danger of the spread of the oidium leaf disease of rubber, which, he suggests, may threaten this industry with a catastrophe similar to that which overtook coffee, once Ceylon's most flourishing industry. During the period from 1925 to 1931, the fungus spread rapidly through the whole of the island's rubber, and in some cases the yield was found to have been halved. Sulphur dusting, however, has given satisfactory results.

WEEDON VICE-PRESIDENT OF KELLY-SPRINGFIELD

W. H. Lalley, president of the Kelly-Springfield Tire Company, announces the election of D. R. Weedon as a vice-president and director of the company and a member of the executive committee. Mr. Weedon, who has been closely identified with technical and sales problems in the textile and automotive indus-

D. R. WEEDON

tries for many years, brings to Kelly-Springfield a wide experience in those fields. A native of North Carolina, he was trained as an electrical mechanical engineer, and received his first field experience in a southern mine.

From there he went with the Westinghouse Electric & Manufacturing Company, working first in the electrical manufacturing works and then engaging in sales work for several years. Following this he became partner in a firm engaged in the manufacture of special textile machinery. This work developed into engineering, sales and consulting work regarding manufacturing, methods, products, mill location and distribution of merchandise, particularly in the textile field. During this period he was retained as sales director for the largest engineering firm of its kind in the country.

For two years Mr. Weedon was president and treasurer of the Holmes Manufacturing Company, operating a 70,000 spindle yarn cotton mill in New Bedford. Three years ago he became treasurer and general manager, and a member of the board and executive committee of the Russell Manufacturing Company, of Middletown, Conn., makers of elastic web and brake lining.

Fred R. Angevine and John E. Searle have also been named as directors of Kelly-Springfield since the resignation of A. F. Eggleston and Byron E. Hepler.

A.S.T.M. ISSUES NEW TENTATIVE STANDARDS

The American Society for Testing Materials is inviting criticism and suggestions on five tentative standards affecting the rubber industry which were issued during the past year. These include "Tentative Specifications for Insulated Wire and Cable: 30 Per Cent Hevea Rubber," "Tentative Specifications for Insulated Wire and Cable: Performance Rubber Compound," "Tentative Methods of Test for Rubber Hose—Braided Construction," "Tentative Methods of Test for Rubber Hose—Wrapped Construction," and "Tentative Methods of Testing Rubber Belting Used for Power Transmission."

Separate copies of pamphlets containing each of these tentative standards may be obtained from the headquarters of the society, 260 South Broad Street, Philadelphia, Pa. Criticisms of these tentative methods and specifications should be addressed to Arthur W. Carpenter, secretary of Committee D-11 on Rubber Products, at the B. F. Goodrich Company, Akron, O.

TRUCK AND TRAILER TIRE SIMPLIFIED PRACTICE

Simplified practice recommendation R103-33, Industrial Truck and Trailer Tires, has been accorded the required degree of written approval by the industry and became effective June 1, according to an announcement by the Division of Simplified Practice, National Bureau of Standards.

The original of this simplified practice recommendation was formulated by the industry in 1929, and covered sizes of industrial truck tires only. The current revision was proposed and developed by the industry's standing committee and well as trailer tires of the pressed-on includes stock sizes of industrial truck as type.

Lastex Advertising Increased

With an augmented advertising appropriation, Adamson Brothers Company, sole distributors of Latex yarn for the United States Rubber Company, is planning an extensive merchandising campaign. Lastex advertising will be placed in five consumer publications and thirteen trade papers this year, whereas last year only one consumer publication and four trade papers were used. Development of Lastex in England is being promoted by the Dunlop Rubber Company.

Ohio Rubber Installs Teletype

The Ohio Rubber Company, Willoughby, O., has recently installed a teletype system for the purpose of providing instantaneous communication between the factory and the company's Detroit office and the plants of Studebaker, Chevrolet and other automobile manufacturers for which it produces rubber parts. The new system has proved important in recent weeks of increased automobile production, particularly in transmitting details of changes in specifications and alterations in molds and matrices.

Financial News

RAYBESTOS-MANHATTAN INCREASES EARNINGS

Raybestos-Manhattan, Inc., has declared a dividend of 25 cents, payable June 15 to stock of record May 31. Three months ago a similar dividend was declared. Previously quarterly dividends of 15 cents were paid.

Raybestos-Manhattan, Inc., reports for quarter ended March 31, 1934, net income of $292,973 after taxes, depreciation, etc., equivalent to 46 cents a share on 642,900 no-par shares of capital stock, excluding 33,112 shares held in treasury. This compares with net loss of $63,428 in first quarter of 1933.

Total assets as of March 31, last, amounted to $16,308,099, comparing with $15,902,844 on December 31, 1933. Current assets were $7,755,895 and current liabilities were $830,599, against $7,384,878 and $609,200, respectively, at close of 1933.

ACKERMAN RUBBER CO. TO START OPERATIONS

The Ackerman Rubber & Plastic Company was organized last month to take over the former plant of the Stearns Conveyor Company at Cleveland, O., for the manufacture of a line of hard and soft rubber products and plastics. The property has been taken on a ten-year lease at a rental of $24,000 for the term, and the new company will expend about $50,000 on equipment and repairs and will employ 150 persons when work is started.

The company is headed by F. J. Ackerman as president and treasurer, and A. C. Fulton as vice-president and chief engineer. Mr. Ackerman was formerly a regional manager for the Olds Motor Works, while Mr. Fulton previously was chief engineer of the Aetna Rubber Company.

Akron Payrolls Gain

Wage earnings in the Akron rubber factories have more than doubled their totals of last year, according to a statistical review compiled by the Akron Chamber of Commerce. Payrolls of the four largest rubber companies were $5,279,500 in March, compared to $2,445,500 in the same month of 1933, the report showed.

Tire Prices Are Advanced

Prices of third and fourth line passenger car tires were moved up last month by the factories in an irregular advance ranging from 5 to 15 per cent. In the case of mail order house, however, it was necessary to make upward adjustment of as high as 30 per cent.

Expands Bloc-Tex Advertising

The Union Asbestos & Rubber Company, Chicago, Ill., has appointed Arthur R. Mogge, Inc., of that city, as advertising counsel. The agency will handle the company's advertising of its Bloc-Tex brake lining.

Converse Earns $49,779

The Converse Rubber Company and subsidiaries report for the year ended March 31, 1934, net income of $49,779 after expenses, depreciation, interest, taxes and other charges. It is equivalent, after $2 preferred dividend requirements, to 25 cents a share on 57,232 common shares.

Toycraft Business Up 231%

Business of the Toycraft Rubber Company during the first three months of 1934 showed an increase of 231 per cent over the first quarter of last year. The company manufactures balloons and rubber novelties.

Henderson Plant in Operation

The first casing to be produced at the factory of the Henderson Tire & Rubber Company, Bucyrus, O., was taken from the mold on May 14, and actual production was started the following day. The company is making a first line tire under the name of the Henderson Classic and a second line casing under the name of the Commerce DeLuxe. C. O. Henderson, president of the company, reports that he has between $60,000 and $70,000 worth of orders on hand.

New Canadian Rubber Factory

The Canadian Mechanical Rubber Corporation is planning to open a factory at Orillia, Ont., during the present month. Machinery for the new plant is being shipped from the United States, according to C. H. Arnold, one of the organizers of the company.

Edge Packing & Rubber Merges

The Edge Packing & Rubber Corporation was recently merged with the Darcoid Company, Inc., the combined organizations taking the name of the latter company. The address of the new firm will be 200 Varick Street, New York City.

Lee Reports 1934 Profit

The Lee Rubber & Tire Corporation has reported earnings of 50 cents a share for the six months ended April 30, 1934, in a preliminary statement. In the same period a year ago the company showed a net loss of $195,159. A dividend of 20 cents a share has been declared, similar to that which was paid six months ago.

Alhambra Rubber Seeks Plant

The Alhambra Rubber & Novelty Company, Akron, O., is reported as being interested in securing a permanent plant site at Mount Gilead, O., according to word received by officials of the latter town. The company, which manufactures various rubber novelties, would require a two-story brick building which they would be interested in purchasing.

DUNLOP RUBBER COMPANY EARNS £1,512,866 IN 1933

The Dunlop Rubber Company, Ltd., reports for the year of 1933 a profit after depreciation, obsolescence, directors' fees and other charges, £1,868,924, compared with £1,353,064 in 1932. After deduction of guaranteed preference diivdends of a subsidiary provided for by Dunlop Rubber, debenture interest, etc., there was a profit before taxes of £1,512,866, against £860,077 in preceding year.

Transfer to taxation reserve was £403,957 and transfer to general reserve was £200,000. Full-year dividend on the preference shares amounted to £285,937 and the proposed dividend on ordinary stock of 8 percent, less income tax, payable May 26, 1934, absorbed £486,765, leaving a surplus of £136,207 for 1933. Balance brought forward from preceding year was £422,208, which, together with surplus for 1933, made a balance of £578,415 carried forward to next account.

FIRESTONE OF CANADA TO REDEEM ITS BONDS

Taking advantage of present low money rates, the Firestone Tire & Rubber Company of Canada, Ltd., wholly owned subsidiary of the Firestone Tire & Rubber Company, Akron, O., has called for redemption June 15 the balance of its first mortgage 7 per cent bonds.

The bonds still outstanding totaling $262,800 will be called at 102½ and accrued interest, thus effecting a saving in excess of $18,000 a year in interest. This action cuts the funded debt of the Firestone Tire & Rubber Company to the bonds of the Firestone Cotton Mills and Firestone of California, which have sinking fund requirements of $600,000 and $750,000 a year, respectively.

Rubber-Linoleum Firm Formed

A new British company under the name of Universal Rubber-Linoleum, Ltd., has been organized to manufacture a composite rubber linoleum, and an issue of 254,000 ordinary shares of 5s each was made last month. Directors include P. J. Burgess, former chairman of the Rubber Growers' Association; H. C. Young, former works director of the northern group of the Dunlop Rubber Company, Ltd.; Arthur Warne Browne, David Scott and R. M. Ungar.

UNITED SHOE MACHINERY EARNS $9,458,016 IN YEAR

Report of the United Shoe Machinery Corporation for the year ended February 28, 1934, certified by independent auditors, shows net profit of $9,458,016 after charges and taxes, equivalent after 6% preferred dividends to $3.93 a share (par $25) on 2,291,284 shares of common stock, excluding 38,305 common shares held in treasury. This compares with net profit in previous fiscal year of $6,023,483 or $2.42 a share on 2,290,672 shares of common stock, excluding 38,917 common shares held in treasury.

In addition to net income of $9,458,016 for year ended February 28, 1934, the corporation received $5,525,000 in dividends from accumulated surpluses of certain associated companies which was taken into surplus account.

NEW ENGLAND NEWS

Reflecting a sharply improved demand for sporting goods and recreational equipment, A. G. Spalding & Brothers, Chicopee, Mass., has been operating virtually at capacity for the past four months in production of golf and tennis lines. It is expected that peak operation under code regulations will be continued well into the summer.

The company's new line of golf balls, specially treated for greater resilience is reported as receiving much attention in trade and sporting circles, with a steadily increasing demand. The company's Chicopee plants manufacture for the domestic trade only.

Footwear plants of the United States Rubber Company at Naugatuck, Conn., will be the scene of an intensive safety campaign during the next few months, with employes' committees having a total membership of 120 in charge. Cyrus H. Ching, director of public and industrial relations, and Walter H. Norton, factory manager, outlined the program at a recent meeting of the Factory Council.

John P. Coe, factory manager of the Naugatuck Chemical Company, Naugatuck, Conn., was toastmaster at the recent annual banquet of the Naugatuck Chember of Commerce. Cyrus Ching, Walter H. Norton and Henry S. Marlor of the U. S. Rubber Company executive organization were among the speakers.

Addison E. Holton, president of the Essex Wire Corporation, has filed a formal protest against the levying of taxes on the company's plant in Wallingford, Conn., formerly occupied by the New York Insulated Wire Company. The Essex corporation had been granted an abatement of taxes for seven years on the Wallingford plant, in consideration of its promise to employ an average of 100 local workers. The plant was closed and operations shifted to the main plant in Detroit on May 1, with re-assessment of taxes following.

All factory workers at the Pawtucket, R. I., plant of the Anaconda Wire & Cable Company were recently given a 10 per cent increase in wages. The plant is at present operating with two shifts and employing approximately 185 workers.

The Canfield Rubber Company, Bridgeport, Conn., reports a fairly substantial increase in business over last year, with excellent prospects for the future. The plant is operating steadily on a five-day week, as required by the code. In a statement to THE RUBBER AGE, executives expressed belief that the tendency toward higher prices of raw material would be of distinct benefit to the branch of the rubber industry in which the company operates.

Fisk Rubber Corporation, Chicopee Falls, Mass., shifted from a five-day week to six days late in May in order to step up production. It is understood that this production rate will be maintained until the number of tires manufactured exceeds the number being sold.

In line with the corporation's policy of encouraging social activities among employes, a dinner dance was held at the Hotel Clinton, Springfield, June 2, by members of the Fisk tire-building division and their friends. More than 300 attended, including Edward A. Maynard, general factory manager; John Grennor, general factory superintendent, and Harold T. Martin, personnel manager, each accompanied by his wife.

The Goodyear Rubber Company, Middletown, Conn., footwear manufacturers, resumed operations early in June after a week's shutdown during which machinery was repaired and reconditioned. The company has experienced a good demand for its footwear this summer due to the exhaustion of retail stocks caused by the severe winter.

All debts having been paid and all assets turned back to the company, Judge Earnest A. Simpson of Superior Court on June 1 formally terminated the receivership of the Russell Manufacturing Company, Middletown, Conn., which began in February, 1932. The company is now operating on a thoroughly sound financial basis, with excellent prospects for the future, it is understood.

John W. Whitehead, president of the Norwalk Tire & Rubber Co., Norwalk, Conn., was elected a director of the Connecticut Chamber of Commerce at its annual meeting in Hartford on May 24.

CARBON BLACK OUTPUT SET RECORD IN 1933

Production of carbon black in 1933 totaled 269,325,000 pounds, the United States Bureau of Mines reported. This was 26,625,000 pounds or 11 per cent above 1932 figures.

Total sales of 374,644,000 pounds in 1933 far exceeded the previous 1929 record and were 43 per cent over 1932 figures. Of the total sales, 222,358,000 pounds, or 59 per cent, represent domestic deliveries and 152,286,000 pounds, or 41 per cent represented exports. Domestic sales were 38 per cent above those in 1932 and exports were 52 per cent higher than in 1932, the report stated.

TRENTON NEWS

Paul Salzman, of North Bergen, N. J., has instituted suit in the Court of Chancery at Trenton, asking for the appointment of a receiver for the Thermoid Company of Trenton, charging mismanagement and waste in the handling of the affairs. The petition states that the defendant concern owns all the outstanding stock of the Thermoid Rubber Company, the Thermoid Textile Company, and the Woven Steel Hose & Rubber Company, with plants in Trenton and 96 per cent of the stock of the Southern Asbestos Company of Charlotte, N. C.

Outstanding securities of the Thermoid Company total $10,862,920, according to the petition. Assets, it is alleged, have been inflated to a fictitious value and are worth much less than represented. Vice Chancellor Egan has ordered the company to show cause why the application for a receiver should not be allowed. Until that time a temporary restraint has been issued against the listing of any additional stock with the New York Stock Exchange or any other exchanges.

The management of the Thermoid Company underwent a change some weeks ago when Robert J. Stokes, president, resigned. Mr. Stokes issued the following statement, "My resignation as president of the Thermoid Company was occasioned by reason of no unpleasantness, but rather on account of differences of opinion as to policies."

Paul Baur, spokesman for the Thermoid Company, defended the firm's financing extension plan. He pointed out that of approximately $2,700,000 principal amount 6 percent notes which matured on February 1 last, more than 90 percent of the holders had already agreed to the company's plan of extension of these notes.

William J. B. Stokes, president of the Joseph Stokes Rubber Company, who had been laid up for several months as a result of injuries received in a fall, is now able to be about again. Mr. Stokes recently contributed $1,000 toward the drive of the Trenton Y.M.C.A.

Both the Thermoid Company and the Pierce-Roberts Rubber Company continue to operate twenty-four hours a day.

Vice Chancellor Bigelow has dismissed an order to show cause against the Thermoid Company involving the sale of stock shares of the estate of Jonathan Dixon, Rutherford, to collect on a $1,995 judgment obtained by the Thermoid firm.

Weldon Roberts Rubber Company, Newark, has begun the manufacture of rubber bands and has installed special machinery for that purpose. The company was established in 1912 for the manufacture of erasers and turns out more than 150 types of the product.

Nearly 400 employes of the Lambertville Rubber Company, Lambertville, N. J., who went on strike recently, returned to work after being out but a few days. The walkout was caused by discontent over an attempt to introduce the team-work system of making four-buckle arctics. Workers feared the change would result in reduced earnings.

Paul Dunkel, manager of the Joseph Stokes Rubber Company, Welland, Ontario, Canada, has recovered from a recent serious illness after spending some time in Georgia.

William Trethaway, general manager of the Murray Rubber Company, Trenton, has been on a business trip through the southern states. F. Robert Lee, vice president of the Thermoid Company, has returned from a trip through the middle west. Lawrence M. Oakley, vice president of the Essex Rubber Company, has been traveling through the New England States.

Names in the News

FRANK S. HARKINS, formerly assistant director of advertising for the United States Rubber Company, has joined the Barrett Company, New York City.

WALTER E. RIGGOT has assumed charge of advertising at the Fisk Tire Company, Inc., Chicopee Falls, Mass. He succeeds HOWARD C. SMITH.

L. D. TOMPKINS, vice-president of the United States Rubber Company, has been appointed general manager of the company's tire division. Mr. Tompkins assumed the duties of acting general manager several weeks ago.

FRED W. CLIMER has been appointed personnel manager for all plants of the Goodyear Tire & Rubber Company, with headquarters at Akron. He was until recently general superintendent of the Goodyear tire factory at Hurlinghame, Argentina, and has been associated with the company since 1917.

JAMES W. MAPLES, superintendent of Plant No. 1 of the Firestone Tire & Rubber Company at Akron, O., has been named to the post of factory manager of the plant of the Firestone Tyre & Rubber Company, Ltd., at Brentford, England. Mr. Maples, a Yale University graduate, is, at 33, one of the youngest executives in the Firestone organization.

C. W. SEIBERLING, vice-president of the Seiberling Rubber Company, spoke over radio station WJW last month in the interest of the national model airplane contest.

WALTER L. TEPPER, president of the Martin Rubber Co[illegible]y, Long Island City, N. Y., was pres[illegible]d with a baby daughter by Mrs. Tep[illegible] on May 21. In a novel announcement, Mr. Tepper described the technical features of the new "1934 'Baby' Model A, released by the Tepper Production Company."

CHARLES WARING, chemist of the Frigidaire Corporation, spoke on "Duprene, a Synthetic Rubber," at a meeting of the Dayton Section of the American Chemical Society on May 17 at the Engineers Club in that city.

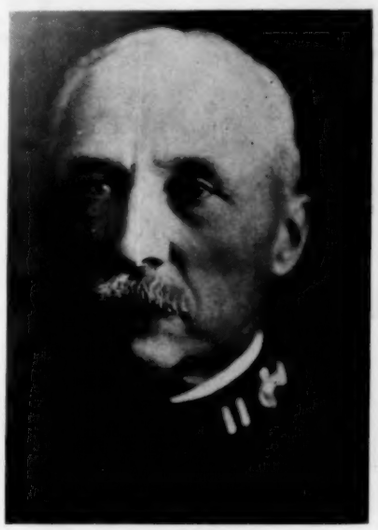
RICHARD E. L. MOOMY, son of CHARLES S. MOOMY, president of the Carlisle Tire & Rubber Company, Carlisle, Pa., has joined the Carlisle organization as assistant to the general superintendent. He had previously served his apprenticeship in the rubber industry at the Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, N. J.

G. M. BRAMANN, who has been with the B. F. Goodrich Company for the past six years as a research chemist and rubber technologist, recently resigned to accept a position with the Niacet Chemical Corporation, Niagara Falls, N. Y., as sales development engineer.

HERMAN W. KOELLIKER, vice-president and factory manager of the Ohio Rubber Company, Willoughby, O., resigned from that post on May 29. He had been associated with Ohio Rubber for a year, previous to which he was vice-president in charge of manufacturing for the Baldwin Rubber Company, Pontiac, Mich. He is succeeded by Raymond A. Mertz.

CHARLES V. STARKEY, of the India Tire Company, Mogadore, O., has filed a petition for the Democratic nomination for Congress from the 14th Ohio district. He is also chairman of the Summit County Democratic organization.

GODFREY L. CABOT, president of Godfrey L. Cabot, Inc., attended a meeting of the Comité Directeur de la Federation Aeronautique Internationale at Paris on May 26. Mr. Cabot is the United States member and vice-president of the F. A. I.



GODFREY L. CABOT

DAVID L. TORCHIN has joined the Miller Rubber Products Company, Inc., as head of the doll division's New York City office. He had previously been associated with department stores in Baltimore and Milwaukee.

C. H. CARLISLE, president of the Goodyear Tire & Rubber Company of Canada, Ltd., speaking before a parliamentary committee on May 23, advocated repeal of the Canadian equivalent of the Sherman Act and the substitution of a system of industrial associations sponsored by the government to control prices, wages, cost standards and business practices. He did not, however, urge that Canada should go as far as the NRA, which he said, had interfered with the details of industry.

HENRI DUCROS, mechanical goods production superintendent for the Societe Francaise B. F. Goodrich, sailed for France on May 26 after a month's stay in Akron.

E. W. MILLER, of the Republic Rubber Company, Youngstown, O., has been elected a member of the board of control of the Mahoning Valley Foremen's Association.

P. A. MILLER and WILDER D. BANCROFT were scheduled to present a paper on "Cold Vulcanization of Rubber" at the 11th annual Colloid Symposium of the American Chemical Society at the University of Wisconsin, Madison, Wis., on June 14.

C. P. HALL, of the C. P. Hall Company, Akron, O., has been elected to membership in the Akron Section of the American Chemical Society.

DRS. ODENWALD and BAUMAN and MR. REDEL, of the Continental Rubber Company, Hanover, Germany, were in this country last month on a visit to various rubber factories in the New York, Boston and Akron areas. While here, they also conferred with a number of suppliers of materials and equipment.

JOHN H. BUNTING, former advertising manager of the B. F. Goodrich Company sundries division, has been appointed director of advertising and merchandising of the Seiberling Rubber Company.

JAMES G. MCKINLEY, general foreman of the Dayton Rubber Manufacturing Company, Dayton, O., is now in Askim, Norway, where he will spend three months supervising the installation of tire building machinery at the factory of the Askim Gummivarefabrik Company. The Norwegian company, which has previously specialized in the manufacture of galoshes and other rubber footwear, will have an initial capacity of 200 tires a day when it starts operations.

HERMAN RESSEGER, time study department manager of the B. F. Goodrich Company, will be one of the speakers at the 11th annual convention of the National Association of Foremen's Clubs at Wheeling, W. Va., on June 15 and 16.

O. D. HOLLENBECK, formerly in charge of final inspection departments at the Firestone Tire & Rubber Company, has been appointed head of veteran placements in the United States Employment Service, with headquarters at Washington, D. C.

W. E. ENGLAND has been appointed as chief engineer of the Ohio Rubber Company, Willoughby, O. He was formerly chief engineer of the F. B. Stearns Company for over nine years and, more recently, head of the experimental department of the Auburn Automobile Company.

L. M. SIMPSON, who last March resigned as general sales manager of the tire division of the United States Rubber Company, has taken up residence on the Pacific Coast. He is making his headquarters in Los Angeles, Cal., where he has become associated with an oil company.

J. P. MOONAN, formerly promotion manager of the American Radiator Company, has joined the United States Rubber Company in the capacity of assistant to the general promotion manager.

DR. H. N. WHITFORD, of the Rubber Manufacturers Association, left New York last month for another extended trip to the Middle West.

H. B. SOULEN has been appointed factory manager of the Kelly-Springeld Tire Company plant at Cumberland, Md.

RUBBER SUIT MADE FOR AIR RACE TO AUSTRALIA

Wiley Post, record round-the-world flier, will enter the MacRobertson International Air Race from London to Melbourne, Australia, in a specially designed rubber suit. Post hopes to win the first prize of £10,000 by flying at altitudes of 30,000 to 35,000 feet at a speed of 300 miles an hour, and, in order to withstand the rarefied pressures of such high-altitude flying, had an oxygen-charged, rubber costume made for him by the B. F. Goodrich Company, Akron, O.

Post's pressure flying suit has been built in two sections, the air-tight pants coming well above his waist while the shirt, which is hermetically attached to a glass and duraluminum, overlaps them by an adequate margin. There is a metal ring around the waist of the trousers and another one which fits over it from the outside and can be drawn taut with a wing nut, thus clamping the upper and lower sections of the suit together in a perfectly sealed joint.

Fresh air is constantly forced into the suit by the same compressor that supplies it to the motor at sea-level density, and there is provision both for expelling the air breathed by the pilot and for the automatic relief of pressure within the suit as soon as it goes above that normally encountered at the surface of the earth.

In order to prevent the outward pressure from swelling his suit up until he will "look like a poisoned pup," Post says a non-elastic rubberized fabric has been used in its construction and ingenious constricting rings have been placed in it at elbows and knees. These are to prevent the suit from stiffening in a one-piece effect from internal pressure once the suit is pumped up and to warrant complete freedom of action by the pilot, for all his bloated appearance.

Post believes the use of this suit will insure far less fatigue than normally results from flying at ordinary altitudes, even when it is used at heights where it is possible to sustain human life only by an artificial supply of oxygen. He also is certain it will eliminate the bad after-effects of headache, dizziness and nausea frequently suffered by pilots who go to great altitudes without any protection against lessened atmospheric pressure. The glass-visored helmet, he says, will be prevented from fogging up or frosting over by the fact that provision has been made to heat the cockpit of the Winnie Mae with the exhaust from her motor.

STRATOSPHERE BALLOON IS READY FOR FLIGHT

The Goodyear Tire & Rubber Company on May 31 completed work on the world's largest free balloon, in which Major William E. Kepner and Captain A. W. Stevens will undertake a stratosphere flight from Rapid City, S. D., with the first favorable weather following June 20.

The balloon has a gas capacity of 3,000,000 cubic feet and, when in mid-air, will be 295 feet high, or nearly as tall as a 30-story office building. It will carry an air-tight metallic gondola.

Bata Shoe Factory Burned

A United Press report from Germany states that the Bata shoe factory at Zlin, Czechoslovakia, was destroyed by fire on June 3, with a loss of $500,000.

Obituaries

Clyde E. Lowe

Clyde E. Lowe, president of the Clyde E. Lowe Company, manufacturers of circular mandrels and tube molds at Cleveland, O., died suddenly at St. Luke's Hospital in that city on May 19. Born in

Bedford, O., 49 years ago, he started his business career as a sales representative for the Fitzsimmons Steel Company, Youngstown, O., leaving in 1918 to found his own business.

Funeral services were conducted May 22, with burial in North Solon Cemetery. He is survived by his widow, his son, Clyde, E., Jr., two sisters and two brothers.

The business of the Clyde E. Lowe Company will be continued by his son and his brother, Clifford Lowe, who has been associated with him for several years.

A. H. Zimmerer

Anton Henry Zimmerer, former treasurer of the Firestone Tyre & Rubber Company of Canada, Ltd., was found dead at his home in Hamilton, Ont., on May 14. An automatic pistol was discovered nearby. Mr. Zimmerer, who was 38 years old, had long been depressed and under medical treatment for a nervous disorder.

He is survived by his wife, one daughter and one sister.

Raymond B. Gillette

Raymond B. Gillette, founder and chairman of the board of the Gillette Rubber Company, Eau Claire, Wis., died in that city May 19 from complications of pneumonia and heart disease. He was 68 years old.

Born at Little York, N. Y., Mr. Gillette was educated at Valparaiso University, Valparaiso, Ind. He was active in the lumber business in several states during the early part of his business career, and he also served three terms as mayor of Benton Harbor, Mich. It was in 1917 that he established the Gillette Rubber Company to manufacture casings and inner tubes, using a safety interliner for preventing blowouts developed by him in collaboration with his brother, H. B. Gillette.

Banks, business places and city offices at Eau Claire were closed in respect to his memory. He is survived by his widow, his daughter, a stepson, a brother, Wallace Gillette, and five grandchildren.

Alvin S. Neumann

Alvin S. Neumann, 33 years old, of 250 Cuyler Avenue, Trenton, sales manager of the Crescent Insulated Wire and Cable Co., was fatally injured early in May when his automobile figured in a crash with another machine near Trenton. He died later in a Trenton hospital from a fractured skull. His wife, Mary, was also injured, but not seriously. Mr. Neumann was an officer of the Hopewell Valley Golf Club, and a member of the Masonic fraternity.

Charles H. Getz

Charles Howard Getz, assistant general manager of the Ohio Rubber Company, Willoughby, O., died from a heart ailment May 30 at his home at Madison-on-the-Lake, O. He was 47 years old and is survived by his widow and his son. Services were held June 2.

F. Raymond Wesley

F. Raymond Wesley, for 37 years associated with the Davol Rubber Company, Providence, R. I., and general manager of that organization until his recent retirement, died May 23 at his home in Providence. Mr. Wesley was born in Columbia, Conn., in 1873, the son of Joseph B. and Laura (Sayles) Wesley. He was a graduate of Trinity College, Hartford, Conn., and immediately after his graduation he went to Providence and entered the employ of the rubber company with which he was associated until his death. He is survived by his widow, Mrs. Alice Pitman Wesley, and a sister, Miss Cora M. Wesley.

CANADA TO INVESTIGATE RUBBER COMBINE CHARGES

What is termed as a combine in the Canadian rubber industry is expected to be cleared up at a special session of Government officials following the Easter recess of Government activities. Executives of leading rubber manufacturing concerns in the Dominion, mainly subsidiaries of larger United States companies, will be brought before Government officials and questioned.

It is probable that a special department will be formed by the Government to deal with certain associations in the Canadian trade. Its functions will be to form industrial commercial codes for the regulation of competition, prevent such practices as fraudulent bankruptcy, false advertising and "loss leaders." There will also be a $5 tax on every mail order catalogue and a special tax on chain stores.

New Rubber Goods

Firestone Deb Sandals

One of the most popular items in the 1934 line of the Firestone Footwear Company, Boston, Mass., is the Deb oxford sandal. Fashioned of fine selected fabric

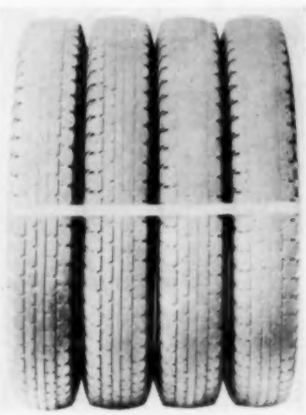
that is easy to clean, these shoes are smart, cool and comfortable. They are offered by the manufacturer with either Cuban or Argentine heels.

Rubber Models of DeSoto Car

The Chrysler Corporation, Detroit, Mich., is distributing small, hard rubber models of its new Airflow DeSoto car. The tiny autos are being sold at retail at two for 25 cents, and it is reported that several thousand have already been sold.

Triple-Tempered Rubber Tire

"Triple-tempered" rubber, a new tread compound created to meet the demands of improved motor car design, is now being used in the manufacture of U. S. Royal tires. The new tread compound was developed by Dr. J. W. Temple, research engineer of the company's tire division, and is said to represent a marked improvement over "tempered rubber," the



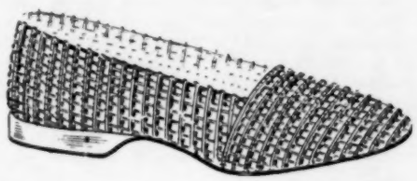
tread compound employed in recent years and developed by Dr. Sidney M. Cadwell, director of the tire development department. The illustration above shows tested tires, the upper half of which was made with the old compound and the lower half with the new "triple-tempered" rubber. The sharpness of the tread in the lower portion is in marked contrast to the smooth-worn portion above.

Bon Dee Liquid Center Ball

The Bon Dee Golf Ball Company, 1351 Beard Avenue, Detroit, Mich., is now offering the Echo, a new liquid center golf ball at a comparatively low price. An extremely hard-wound ball, it not only gives maximum distance, according to the manufacturer, but also has that much-desired "click" which is found only in golf balls of the better grade.

Lastex Traveling Slipper

Lastex in an open-work mesh is employed in a new and novel traveling slipper that has a self-conforming upper. The sole of leather is thin, while the spring



heel is satin-covered. It is being offered particularly for a woman's traveling kit, the total weight of a pair of such slippers being only four ounces.

Dayco Printing Rollers

Under the name of Dayco rollers, the Dayton Rubber Manufacturing Company, Dayton, O., has introduced a line of printing rollers, which are said to embody new principles of design and construction. The printing roller shaft is first covered with a soft rubber composition that is homogeneous, but not porous or spongy. The surface sleeve is a new flexible, yet tough, composition that is ink resisting, unaffected by climatic conditions, and maintains a uniform tack.

Cork-Rubber Composition

A new composition under the name of Kautex has been introduced in England to combine the qualities of cork with the strength of rubber. Although the percentage of rubber which is used as a binder is high, it is claimed that the composition does not spread when used as jointing or packing, and that its ability to absorb vibration is equal to that of tough sponge rubber; but, unlike the latter, it will not collapse under compression. The specific gravity is much lower than that of rubber. It can be supplied in plies of from 1/32 to ½ in., which can be built up to produce any thickness required. The amalgam is produced by Kautex (Plastics), Ltd., Empire Works, 9 Deansbrook Road, Edgware, Middlesex.

Toe Action Sandal

Under the name of the Toe Action Sandal, the Charles Hartman Manufacturing Company, 860 Weed Street, Chicago, Ill., is making a new line of beach sandals with a wooden sole that "flexes." A con-

cealed rubber insert in the sole permits it to bend like any walking shoe. Made on a walking shoe last, these bathing shoes fit and conform to the foot and are offered in both high and low heel models in an attractive variety of strap designs and color combinations.

Ground Grip Truck Tire

For construction work and operation where extreme traction is needed, the Firestone Tire & Rubber Company, Akron, O., has developed the Ground Grip heavy duty truck tire. An unusual feature is a massive chevron designed tread that grips and pulls in mud, loose sand, or gravel, permitting no slipping or skidding either forward or sideward. This tire operates with lower air pressure than the

old heavy duty types and, therefore, absorbs shocks and surface irregularities. It is being made in sizes from 6.00-20 to 10.50-24 to be used on rims specified ranging from 5 in. to 10 in.

MARKETS

RUBBER—COTTON AND FABRICS—CHEMICALS

NEW YORK, JUNE 9, 1934

Crude Rubber

REACHING a high of 15½ cents on May 7, spot crude rubber declined steadily since that date to a low for the month of 12 cents quoted on the 28th and 29th. Average spot price for the month was 13.26 cents compared to 12.10 in April. Early in the month some speculative long rubber was liquidated followed by heavy buying which brought prices over the 15 cent level. On advices that restriction from producing countries would not start until August, prices on the Exchange closed 12 to 22 points lower on the 8th since which date the decline was almost steady to the low of 12 cents. On June 1, when restriction formally went into effect prices rose 61 to 63 points. Continued trade support and a firm market abroad has since raised the level to today's price of 13 11/16 on the outside market and 13.47 for June on the Exchange. Quotations on the Exchange, outside market, London and Singapore follow:

Plantations—

Ribbed Smoked Sheets—			
Spot	—	@	.13⅛
June	—	@	.13⅛
July-Sept.	—	@	.13⅛
Oct.-Dec.	—	@	.14⅛
First Latex, crepe spot	—	@	.15⅛
Amber Crepe, No. 2	—	@	.11⅞
Amber Crepe, No. 3	—	@	.11⅞
Amber Crepe, No. 4	—	@	.10⅞
Brown Crepe, clean thin	—	@	.11⅛
Brown Crepe, rolled	—	@	.09½

Latex—

Liquid Latex, per gal.	.60	@	—

Paras—

Up-River, fine	—	@	.11¾
Acre Bolivian, fine	—	@	.12

Balata—

Block, Ciudad	—	@	.45

LONDON MARKET

Standard Smoked Sheets—Buyers—June 9

July	—	@	6 1/16d
July-Sept.	—	@	6 1/16d

SINGAPORE MARKET

Standard Smoked Sheets—Sellers—June 9

July	—	@	6 1/16d
July-Sept.	—	@	6 1/16d

Reclaimed Rubber

Rubber manufacturers appear to be giving consideration again to the replacement of a portion of crude with reclaimed rubber at present levels. Some manufacturers are protecting their reclaim requirements for the balance of the year with the result that reclaimers report a fairly active market at this time. Prices are unchanged except No. 1 tube and white tires which have advanced 1 cent and high tensile black, up ½ cent. The percentage of reclaim to crude consumption continues to rise, April proportion being reported at 20.9%. Current quotations follow:

High Tensile

Super-reclaim, black	lb.	.08¼	@	.09
High Tensile Red	lb.	.07	@	.07¼

Shoe

Unwashed	lb.	.06½	@	.06¾
Washed	lb.	.08	@	.09

Tube

No. 1 (Floating)	lb.	.13	@	—
No. 2 (Compounded)	lb.	.07½	@	.07¾

Tires

Black	lb.	.05	@	.05¼
Black, selected tires	lb.	.05¼	@	.05½
Dark Gray	lb.	.06¼	@	.06½
White	lb.	.09¼	@	.09½
Truck, Heavy Gravity	lb.	.05¼	@	.05½
Truck, Light Gravity	lb.	.05¾	@	.06

Miscellaneous

Mechanical blends	lb.	.04	@	.04¼

Scrap Rubber

The scrap market has been somewhat dull since our last report but within the past week or ten days, there has been a revived interest on the part of buyers. Tires have become more active. Prices have declined somewhat for tires and shoes but No. 1 tubes have jumped ¼ cent. Collections are limited at present levels. Current quotations follow:

(Prices to Consumers)

Auto tire peelings	ton	18.00	@19.00
Mixed auto	ton	9.00	@10.00
Clean solid truck tires	ton	35.00	@37.50
Boots and shoes	ton	23.50	@25.00
Arctics, untrimmed	ton	19.50	@21.00
Inner tubes, No. 1	lb.	.05¼	@ .06
Inner tubes, No. 2	lb.	.03½	@ .03⅞
Inner tubes, Red	lb.	.02½	@ .02⅝

Cotton

After a period of steady prices in May, during which the average of spot quotations was 11.44 cents, cotton has jumped this month to over the 12 cent level with a large volume of trading done on the New York exchange. Favorable crop conditions in May tended to hold the price down but early this month, continued rains in the Eastern districts, where moisture was not wanted, caused quotations to move up about $1.50 a bale on June 5. Continued rainfall brought further advances, October being quoted 12.30 cents today as against 11.99 a week and 11.63 two weeks ago. The Department of Agriculture reported 10,300,000 bales of cotton in the country on May 1, against 11,900,000 a year before, and an average of 5,200,000 in the ten years ended in 1930. Quotations on the N. Y. Cotton Exchange for Middling Uplands follow:

	May 10	June 9		
	Close	High	Low	Close
July	12.16	12.09	12.03	12.06
Oct.	12.29	12.33	12.26	12.30
Dec.	....	12.44	12.38	12.42

Tire Fabrics

(Prices Net at the Mill—Process Tax Included)

Peeler, carded, 23/5/3	lb.	.42½	@	—
Peeler, carded, 23/473	lb.	.43½	@	—
Peeler, carded, 15/3/3	lb.	.40½	@	—
Peeler, carded, 13/3/3	lb.	.39½	@	—
Egyptian, carded, 23/5/3	lb.	.53	@	.55½
Egyptian, combed, 23/5/3	lb.	.56	@	—

CHAFERS

Carded, American, 1 1/16"	lb.	.41	@	.42
Carded, American, 1"	lb.	.32	@	.34

LENO BREAKER

Carded, American, 1 1/16"	lb.	.41	@	.42
Carded, American, 1"	lb.	.32	@	.34

Sheetings

Count	Width	Weight			
48x40	36 in.	5.50	lb.	—	@ .05½
40x40	36 in.	6.15	lb.	—	@ .05
40x36	36 in.	6.50	lb.	—	@ .04¾
48x48	40 in.	2.50	lb.	—	@ .10¾
48x48	40 in.	2.85	lb.	—	@ .09½
64x68	40 in.	3.15	lb.	—	@ .10¼
56x60	40 in.	3.60	lb.	—	@ .08⅞
48x44	40 in.	3.75	lb.	—	@ .07⅝
44x40	40 in.	4.25	lb.	—	@ .06⅜

Ducks

Enameling	lb.	.32	@	.37½
Belting and Hose	lb.	.34	@	—
Single filling, A grade	lb.	.16¼	@	.17¼
Double filling	lb.	.17¾	@	.18¾

Closing Rubber Prices on New York Commodity Exchange, Inc.

No. 1 Standard Contract of 10 tons

FROM MAY 11 TO JUNE 10

Date	Spot	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Sales
May 11	13.75	13.57	13.65	13.73	13.86	14.00	14.10	14.20	14.30	14.42	14.53	14.64	14.75	——	583
12	13.00	12.75	12.82	12.92	13.04	13.18	13.27	13.35	13.44	13.53	13.61	13.70	13.80	——	641
13	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
14	12.90	12.80	12.87	12.95	13.07	13.22	13.32	13.43	13.56	13.70	13.79	13.88	13.97	——	1389
15	13.18	13.08	13.15	13.24	13.38	13.54	13.65	13.75	13.86	13.98	14.09	14.21	14.31	——	866
16	12.87	12.75	12.82	12.90	13.05	13.21	13.31	13.42	13.53	13.65	13.75	13.85	13.95	——	497
17	12.94	12.99	13.04	13.09	13.23	13.37	13.46	13.56	13.68	13.80	13.90	14.00	14.10	——	534
18	12.94	12.88	12.95	13.03	13.18	13.33	13.45	13.56	13.67	13.76	13.84	13.93	14.02	——	345
19	12.88	12.80	12.87	12.95	13.10	13.25	13.36	13.46	13.57	13.67	13.76	13.85	13.95	——	24
20	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
21	13.00	12.85	12.92	13.00	13.15	13.31	13.42	13.52	13.62	13.72	13.81	13.91	14.01	——	30
22	12.75	12.67	12.74	12.82	12.96	13.12	13.21	13.31	13.41	13.53	13.64	13.75	13.86	——	134
23	12.07	11.90	11.97	12.06	12.20	12.36	12.44	12.52	12.63	12.75	12.85	12.96	13.07	——	969
24	12.07	11.93	12.00	12.08	12.22	12.36	12.48	12.59	12.70	12.80	12.90	13.00	13.10	——	533
25	12.30	12.20	12.27	12.35	12.49	12.64	12.75	12.86	12.98	13.10	13.21	13.33	13.44	——	316
26	12.30	12.20	12.27	12.35	12.49	12.63	12.74	12.85	12.96	13.08	13.16	13.25	13.35	——	125
27	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
28	11.96	11.88	11.95	12.07	12.19	12.33	12.40	12.55	12.71	12.84	12.94	13.04	13.14	——	676
29	12.00	11.91	11.98	12.10	12.24	12.38	12.49	12.60	12.71	12.86	12.95	13.04	13.15	——	301
30	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
31	12.25	——	12.25	12.37	12.51	12.65	12.76	12.87	12.98	13.11	13.23	13.35	13.47	——	447
June 1	12.94	——	12.86	12.99	13.13	13.29	13.39	13.50	13.62	13.73	13.85	13.98	14.09	14.21	819
2	12.87	——	12.77	12.89	13.03	13.18	13.30	13.42	13.54	13.62	13.77	13.92	14.04	14.17	318
3	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
4	12.75	——	12.73	12.85	12.98	13.12	13.24	13.35	13.46	13.61	13.69	13.78	13.89	14.00	211
5	13.13	——	13.06	13.18	13.33	13.48	13.59	13.70	13.81	13.93	14.05	14.17	14.28	14.40	486
6	13.19	——	13.16	13.28	13.43	13.58	13.69	13.79	13.90	14.02	14.13	14.24	14.35	14.47	605
7	13.12	——	13.12	13.22	13.37	13.52	13.63	13.73	13.84	13.97	14.08	14.19	14.31	14.44	195
8	13.63	——	13.50	13.65	13.76	13.94	14.06	14.20	14.34	14.47	14.58	14.70	14.82	14.94	611
9	13.63	——	13.47	13.59	13.73	13.88	13.99	14.10	14.21	14.35	14.48	14.61	14.73	14.86	235
10	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——

Rubber CHEMICAL Markets

NEW YORK, JUNE 9, 1934

[All Quotations F.O.B. Works Unless Otherwise Noted]

ACCELERATORS

Organic

A-1	lb.	.21 @	.25
A-5-10	lb.	.33 @	.36
A-7	lb.	.53 @	.65
A-11	lb.	.60 @	.75
A-16	lb.	.55 @	.65
A-19	lb.	.56 @	.75
A-32	lb.	.70 @	.80
Aldehyde ammonia, crystals	lb.	.65 @	.67
Altax	lb.		
Captax	lb.		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.46 @	.47
Diphenylguanidine	lb.	.36 @	.37
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½ @	.42
Guantal	lb.	.42 @	.51
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.37 @	—
Lead Oleate, No. 999	lb.	.10 @	—
Witco	lb.	.10 @	—
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.36 @	.37
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
Phenex	lb.	.50 @	.55
Pipsol X	lb.	3.55 @	4.00
R & H 40	lb.	.40 @	.41
R & H 50	lb.	.40 @	.41
R-2	lb.	1.55 @	1.90
R-2 Base	lb.	4.55 @	5.00
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Thiocarbanilid, drums	lb.	.20 @	.23
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.60
Tuads	lb.		
Ureka	lb.	.62 @	1.00
Ureka C	lb.	.58 @	.69
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.48 @	.60
Zimate	lb.		

Inorganic

Litharge, domestic	lb.	.06¾ @	—
Magnesia, calcined, heavy	cwt.	4.00 @	4.50

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.36 @	.38
Ultramarine	lb.	.07 @	.10

Browns

Sienna, Italian	lb.	.06 @	'13
Umber, Turkey	lb	.04 @	.04½

Greens

Chrome, light	lb.	.23 @	.26
medium	lb.	.24 @	.27
dark	lb.	.27 @	.30
Chromium Oxide, bbl.	lb.	.23 @	.27

Reds

Antimony			
crimson, 15/7	lb.	.45 @	—
sulfur, free	lb.	.48 @	.52
Indian English	lb.	.09 @	.10
Domestic (Maroon)	lb.	.11 @	—
Red oxide, pure	lb.	.10 @	.12
Rub-Er-Red, f.o.b. Easton	lb.	.09¼ @	—

Whites

Cryptone CB, No. 21	lb.	.06 @	.06¼
Cryptone, No. 19	lb.	.06 @	.06¼
Lithopone, Albalith	lb.	.04½ @	.04¾
Lithopone, Azolith	lb.	.04½ @	.04¾
Rayox	lb.		
Titanium oxide	lb.	.17 @	.19
Titanox B	lb.	.06 @	.06½
Titanox C	lb.	.06 @	.06½
XX Zinc Sulphide, bbls.	lb.	.11 @	.11¾

Zinc Oxide—American Process

American Azo:			
ZZZ (lead free)	lb.	.05¾ @	.06
ZZ (leaded)	lb.	.05½ @	.05¾
Horsehead Lead Free Brand:			
Selected	lb.	.05¾ @	.06
Special	lb.	.05¾ @	.06
XX Red	lb.	.05¾ @	.06
XX	lb.	.05¾ @	.06
XX Green	lb.	.05¾ @	.06
Leaded Brand, Standard	lb.	.05½ @	.05¾
Sterling	lb.	.05½ @	.05¾
Superior	lb.	.05½ @	.05¾
Lehigh	lb.	.05¼ @	.05½
U. S. P., bbls.	lb.	— @	.12¾
Kadox, black label	lb.	.09⅜ @	.09⅝
Blue label	lb.	.08⅜ @	.08⅝
Red label	lb.	.07 @	.07¼
St. Joe, black label	lb.	.05¾ @	.06
green label	lb.	.05¾ @	.06
red label	lb.	.05¾ @	.06

Zinc Oxide—French Process

Anaconda, lead free	lb.	.05¾ @	.06
Anaconda, selected lead free	lb.	.06¼ @	.06½
Florence White seal, bbls.	lb.	— @	.10⅜
Green seal	lb.	.09⅜ @	.09⅝
Red seal	lb.	.08⅜ @	.08⅝

Yellows

Chrome	lb.	.15 @	.16
Ocher, dom. med.	lb.	.01½ @	.02

BLACKS

Arrow "Aerfloted" Specification	lb.	.0535 @	.0825
Bone, powdered	lb.	.05½ @	.12½
Carbon, compressed	lb.	.0535 @	.0825
uncompressed	lb.	.0535 @	.0825
"Certified," Cabot	lb.	.0535 @	.0825
Spherons	lb.	.0535 @	.0825
"Disperso"	lb.	.0535 @	.0825
Drop, bbls.	lb.	.05½ @	.14
"Excello," compressed	lb.	.0535 @	.0825
"Fumonex"	lb.	.03 @	.07
"Gastex"	lb.	.03 @	.07
Lampblack	lb.	.06 @	.08
"Micronex"	lb.	.0535 @	.0825
"Supreme"	lb.	.0535 @	.0825
Thermatomic—"P 33"	lb.	— @	—
"Thermax"	lb.	— @	—
United "Dixie" & "Kosmos"	lb.	.0535 @	.0825

COMPOUNDING MATERIALS

Aluminum Flake	ton.	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½ @	.12
Asbestine	ton	14.00 @	15.00
Barium carbonate (98-100%)	ton	56.50 @	61.50
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	10.00 @	18.00
Western prime white	ton	23.00 @	30.00
Basofor	lb.	.04½ @	—
Bentonite	lb.	.02 @	.03
Blanc fixe dry f.o.b. works	ton	42.50 @	75.00
Calcene	ton	35.00 @	45.00
Catalpo (fact.)	lb.	.02 @	—
Chalk, precipitated			
Suprex white, extra lt.	ton	60.00 @	75.00
heavy	ton	45.00 @	55.00
Clay, Kaolin, domestic	ton	7.50 @	15.00
Aerfloted, Suprex	ton	7.50 @	10.00
Congaree	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Lexington	ton	10.00 @	22.00
McNamee	ton		
Par	ton		
Tensulite		15.00 @	—
Cotton Flock	lb.	.10½ @	.18
Glues, extra white	lb.	.20 @	.30
medium white	lb.	.14 @	.19
Kalite No. 1	ton	30.00 @	55.00
Kalite No. 3	ton	40.00 @	65.00
Magnesia, carbonate	lb.	.06 @	.06¾
Mica	lb.	.04 @	—
Rottenstone (powdered)	lb.	.02½ @	.05
Soapstone, powdered	ton	16.00 @	22.00
Starch, powdered	cwt.	2.81 @	3.01
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	ton	17.00 @	18.00
English Cliffstone	ton	33.00 @	43.00
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.10½ @	—
Zinc Stearate	lb.	.23 @	—

MINERAL RUBBER

Genasco (factory)	ton	25.00 @	27.00
Hard Hydrocarbon	ton		
Parmr, solid	ton	21.00 @	26.00
Pioneer, MR, solid	ton		
Pioneer-granulated	ton		

SPECIALTIES

Aromatics—Rodo	lb.		
Para-Dors No. 5145	lb.	2.00 @	—
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.80
Tonox	lb.	.56 @	.60

SOFTENERS

Acids

Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.90
Tartaric, crystals	lb	.26 @	—

Acids, Fatty

Laurex	lb.	.15 @	.16
Stearex	lb.	.08 @	.12
Stearic, double pressed	lb.	.08 @	.12

Alkalies

Caustic Soda, 76%	cwt.	3.60 @	—
Soda Ash, 58% C.L.	cwt.	2.52 @	—

Oils

Corn, refined, bbls	lb	.06¾ @	.07¼
Cottonseed, crude	gal.	— @	.04
Cycline Oil	gal.	.15 @	.28
Degras (c.l. 100 bbls.)	lb.	.02¾ @	—
Less c.l. (10-25 bbls.)	lb.	.03 @	—
Lots less than 10 bbls.	lb.	.03¼ @	—
Fluxrite	lb.	.05½ @	.06½
Palm Lagos	lb.	.03¾ @	.04
Niger	lb.	.03⅜ @	.03½
Para-Flux	gal.	.17 @	—
Petrolatum, light	lb.	.02½ @	—
Pigmentaroil, tank cars	gal.	.14 @	—
in drums	gal.	.20 @	.21½
Pine, steam distilled	gal.	.59 @	.61
dest. dist., drums	gal.	.50 @	.53
Seedine, c.l.	lb.	.07¼ @	—
Tackol	lb.	.08½ @	.18
Witco Palm Oil	lb.	.07¼ @	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Woburn No. 8, c.l.	lb.	.06 @	—
Wobonite, c.l.	lb.	.05 @	—

Resins and Pitches

Pitch, Burgundy	lb.	.05 @	.06
coal tar	gal.	.05½ @	.06
pine, 200 lb. gr. wt.	bbl.	6.00 @	—
Rosin, grade K, 280 lb.	bbl.	6.00 @	—
Pigmentar, tank cars	gal.	.14 @	—
in drums	gal.	.20 @	.21½
Tar Retort, drums	bbl.	12.50 @	—

Solvents

Acetone, pure	lb.	.11 @	—
Alcohol, denatured, No. 1 bbls.	gal.	.43 @	—
Benzol, 90%	gal.	— @	.24
Bondogen	lb.	— @	—
Carbon, bisulfide	lb.	.05 @	.06
Carbon, tetrachloride	lb.	.06 @	—
Dichlorethylene	lb.	.29 @	—
Dipentene	gal.	.31 @	.41
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Ethylene dichloride	lb.	.05½ @	.06½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.26 @	.31
Plastogen	lb.		
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.55 @	—
wood	gal.	.50 @	—
dest. dist., drums	gal.	.43 @	.45

Waxes

Beeswax, white	lb.	.34 @	.37
Carnauba	lb.	.20 @	.38
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.10 @	.11
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30

Paraffin (c.l.—f.o.b. N. Y.)

Yellow crude scale	lb.	.03⅝ @	—
White crude scale 124/126	lb.	.03⅝ @	—
Refined, 125/127, 138/140	lb.	.04¾ @	—

ANTI-OXIDANTS

AgeRite, Gel	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Flectol-A and Flectol-B	lb.	.54 @	.62
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.52 @	.65
Retardex	lb.	.35 @	.40
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.60

MOLD LUBRICANTS

Dipex	lb.	.06 @	.08
Sericite, f.o.b. N. Y.	ton	65.00 @	—
Zip	lb.	— @	—

SUBSTITUTES (FACTICE)

Amberex	lb.	.13¾ @	—
Black	lb.	.08½ @	—
White	lb.	.08 @	.12
Brown	lb.	.07 @	.11½

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½ @	.04½
Sulfur flour,			
Refined, 100% pure (bags)	cwt.	2.50 @	3.40
Commercial (bags)	cwt.	1.55 @	2.50
Telloy	lb.		
Vandex	lb.		

Crude Rubber
Latex and Guayule
Reclaimed Rubber
Tires and Tubes

STATISTICS OF THE INDUSTRY

Rim Production
Automobiles
Gasoline
Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,472	7.42	471,543
1932	409,584	31,936,459	3.47	20,929	2,015,612	4.30	388,655
1933	407,817	44,034,064	4.82	20,537	2,601,352	5.65	427,280
1932:							
April	37,903	3,181,343	3.74	2,128	196,934	4.53	35,775
May	34,182	2,798,914	3.71	1,505	144,561	4.30	32,677
June	40,808	2,647,085	2.89	1,981	134,336	3.02	39,136
July	32,306	2,102,915	2.91	2,030	179,699	3.95	30,276
August	33,449	2,027,045	2.71	1,339	128,952	4.29	32,110
Sept.	28,956	1,774,403	2.73	2,388	241,960	4.54	26,568
Oct.	35,096	2,436,522	3.10	1,059	98,022	4.13	34,037
Nov.	28,908	2,263,469	3.48	1,745	158,618	4.06	27,163
Dec.	31,384	2,360,061	3.34	770	66,165	3.98	30,614
1933:							
Jan.	29,822	2,213,828	3.03	1,403	109,916	3.49	28,419
Feb.	22,603	1,554,086	3.12	1,244	102,129	3.73	21,359
Mar.	27,936	1,867,657	2.98	1,127	86,216	3.42	26,809
April	20,240	1,291,136	2.85	798	70,111	3.92	19,442
May	26,002	1,694,963	2.93	1,842	189,451	4.59	24,894
June	22,900	1,780,495	3.47	1,276	156,168	5.46	21,624
July	44,625	4,293,111	4.29	1,419	219,945	6.92	43,206
August	44,257	5,391,709	5.44	2,205	302,132	6.12	42,052
Sept.	44,912	6,110,956	6.07	2,369	335,798	8.89	42,543
Oct.	44,474	6,115,330	6.14	2,669	397,167	6.64	41,805
Nov.	40,582	5,850,714	6.44	2,188	333,631	6.81	38,394
Dec.	39,461	5,869,556	6.75	1,888	293,690	6.94	37,573
1934:							
Jan.	47,963	7,403,123	6.89	1,975	352,116	7.96	45,988
Feb.	34,335	5,262,711	6.84	2,133	476,232	9.97	32,202
Mar.	41,119	6,765,173	7.34	2,947	583,313	8.83	38,172
April	43,841	8,232,746	8.37	2,814	588,453	9.18	41,027

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All Quantities in Long Tons)

	Guayule Tons	Guayule Dollars	Balata Tons	Balata Dollars	Jelutong Tons	Jelutong Dollars	Liquid Latex (1) Tons	Liquid Latex (1) Dollars
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1932	—	—	708	147,403	4,607	616,596	5,085	601,999
1933	—	—	1,658	2,261,869	5,989	944,895	11,085	1,833,671
1933:								
April	—	—	7	2,054	210	26,856	794	80,794
May	—	—	35	9,869	463	55,560	734	71,008
June	—	—	759	1,514,296	466	61,229	604	66,827
July	—	—	238	76,141	638	79,049	618	85,636
Aug.	—	—	272	527,147	390	55,509	1,156	196,138
Sept.	—	—	65	30,738	761	149,296	1,343	267,516
Oct.	—	—	119	47,663	542	99,249	1,561	310,531
Nov.	—	—	31	11,252	626	125,160	1,239	282,065
Dec.	—	—	42	20,008	708	143,868	1,290	270,533
1934:								
Jan.	—	—	98	43,932	766	169,966	1,126	239,054
Feb.	—	—	68	36,346	453	102,471	885	193,732
Mar.	51	9,464	145	51,080	25.	43,532	1,134	257,545
April	100	18,928	128	50,965	533	98,658	1,334	321,390

(1) Weight given in pounds of dry rubber contained in latex.

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1927	1928	1929	1930	1931	1932	1933	1934
Jan.	31,518	34,403	43,002	36,194	28,557	29,648	21,661	40,413
Feb.	30,137	33,702	41,594	33,302	28,797	31,821	21,638	40.609
Mar.	36,141	35,688	44,730	35,540	32,788	29,505	18,047	47,097
Apr.	35,871	32,772	47,521	39,686	33,321	27,515	25,928	44,947
May	34,592	37,333	49,233	39,386	37,817	30,957	44,580	.....
June	33,801	37,676	43,227	34,195	37,916	41,475	51,326	.....
July	29,219	37,407	41,526	29,508	31,397	29,976	50,184	.....
Aug.	33,460	42,927	38,274	30,850	27,586	23,721	44,939	.....
Sept.	27,214	39,882	34,707	25,515	23,638	23,847	35,686	.....
Oct.	26,790	40,857	34,800	27,516	22,277	22,286	31,906	.....
Nov.	26,792	37,461	27,659	23,691	22,943	23,231	29,162	.....
Dec.	25,492	31,232	25,531	21,687	21,409	18,015	29,087	.....
Tot.	371,027	441,340	469,804	375,980	348,986	332,000	405,689	.....

Figures on Quarterly Basis

Quarter	1926	1927	1928	1929	1930	1931	1932	1933
Jan./Mar.	94,301	99,216	103,558	128,565	101,610	89,652	85,309	64,326
Apr./June	87,109	103,242	103,500	139,292	112,229	107,755	92,643	125,126
July/Sept.	93,793	89,210	117,573	113,746	85,261	83,632	72,523	132,406
Oct./Dec.	83,212	80,860	117,597	84,872	72,020	65,645	64,145	94,198
Totals	358,415	372,528	442,227	466,475	371,120	346,684	314,620	416,056

Note—The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1923	74,766	69,534	22.7	.....
1924	80,079	76,072	22.4	.....
1925	132,930	137,105	35.6	13,203
1926	180,582	164,500	45.9	23,213
1927	189,144	178,471	47.6	24,980
1933:				
Jan.	5,30:	4,811	21.0	16,262
Feb.	4,578	4,363	20.2	16,570
Mar.	3,847	3,454	19.1	15,496
Apr.	4,617	4,407	13.1	14,370
May	8,366	7,770	17.4	13,734
June	10,591	9,674	18.8	13,231
1934:				
Jan.	9,828	7,000	17.3	24,263
Feb.	9,504	7,646	18.8	23,356
Mar.	11,479	9,683	20.6	25,113
Apr.	10,185	9,387	20.9	22,033
May	....	....	...	....
June	....	....	...	....

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1928	208,516	223,000	50.4	24,785
1929	218,954	226,588	48.4	27,464
1930	157,967	153,497	40.8	22,000
1931	133,351	124,126	33.9	19,257
1932	75,608	77,504	23.4	16,354
July	12,049	10,317	20.6	14,108
Aug.	11,708	9,446	21.0	15,037
Sept.	10,435	7,862	22.0	15,869
Oct.	9,466	7,212	22.6	17,748
Nov.	9,063	6,335	21.7	19,170
Dec.	9,539	5,951	20.5	20,746
July	....	....	...	....
Aug.	....	....	...	....
Sept.	....	....	...	....
Oct.	....	....	...	....
Nov.	....	....	...	....
Dec.	....	....	...	....

* Stocks on hand at the end of month or year.
(Rubber Manufacturers' Association figures raised to 100%)

U. S. Consumption of Gasoline

(In Thousands of Barrels of 42 Gallons)

	1932	1933	1934
January	26,038	26,510	29,416
February	25,378	23,312	25,048
March	29,597	28,227	30,528
April	31,234	30,176	32,735
May	32,016	33,999	.....
June	39,489	37,710	.....
July	30,929	34,458	.....
August	35,706	37,426	.....
September ..	33,828	34,303	.....
October	32,680	32,973	.....
November ..	29,895	30,262	.....
December ..	27,110	28,787	.....
Total	373,900	378,143	.....

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1932																																
January	—	—	—	4½	4½	4⅝	4⅝	4⅝	4⅝	—	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	—	4½	4⅝	4⅝	4⅝	4⅝	4⅝	4⅝	—	4⅝	4⅝	4⅝	4⅝	4⅝	—	4⅝
February	—	—	—	4½	4½	4⅝	4⅝	4½	4½	4	4	4	4⅛	4	4	4	—	4	4	4	4	4	4	4	4	3⅞	3⅞	3⅞	3⅞	3⅞	—	4
March	—	—	—	3½	3½	3⅜	3⅜	3½	3½	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	—	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	—	3⅜	3⅜	3⅜	3⅜	3⅜	—	3⅜
April	—	—	—	3	3	3	3	3	3	3	3	3	3	3	3	3	—	3	3	3	3	3	3	3	3	3	3	3	3	3	—	3
May	—	—	—	3¼	3¼	4	4	3⅞	4	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	—	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	—	3⅞
June	—	—	—	2¾	2¾	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	—	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	—	2⅝
July	—	—	—	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	—	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	2⅝	—	2⅝
August	—	—	—	3¼	3¼	3⅜	3⅜	3½	3½	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	—	3⅜	3½	3½	3½	3½	3½	3½	3⅜	3⅜	3⅜	3⅜	3⅜	3⅜	—	3⅜
September	—	—	—	4¼	4¼	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	—	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	4⅛	—	4⅛
October	—	—	—	3¾	3¾	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	—	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	3⅞	—	3⅞
November	—	—	—	3½	3½	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3¾	—	3¾
December	—	—	—	3½	3½	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1933																																
January	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3
February	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3
March	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
April	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
May	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
June	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
July	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
August	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
September	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
October	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
November	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
December	—	—	—	3¾	3¾	3¾	3¾	—	3¾	3¾	3¾	3¾	3⅝	3¾	3⅝	3⅝	—	3¾	3¾	3¾	3¾	3¾	—	3⅝	3¾	3¾	3¾	3¾	3¾	3¾	3¾	3⅝
1934																																
January	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
February	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
March	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
April	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
May	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
June	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1929

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50	1926	48.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45	1927	37.72
1912	121 60	1916	72.50	1920	36.30	1924	26.20	1928	22.48
1913	82.04	1917	72.23	1921	16.36	1925	72.46	1929	20.55

Average Monthly Price per Pound Since 1928

Month	1928 Cents	1929 Cents	1930 Cents	1931 Cents	1932 Cents	1933 Cents	1934 Cents
Jan.	40.25	20.14	15.24	8.34	4.38	3.08	9.32
Feb.	32.75	23.97	15.85	7.70	4.03	2.95	10.45
Mar.	26.82	24.55	15.34	7.71	3.35	3.01	11.01
Apr.	18.97	21.18	14.93	6.43	3.02	3.56	12.10
May	18.99	21.46	14.24	6.49	3.09	4.95	13.26
June	19.59	20.64	12.45	6.35	2.66	6.15	....
July	19.40	21.30	11.24	6.37	2.89	8.01	....
Aug.	19.46	20.59	9.96	5.38	3.63	7.31	....
Sept.	18.47	20.37	8.28	5.08	3.84	7.30	....
Oct.	18.83	19.67	8.20	4.87	3.65	7.64	....
Nov.	18.26	16.62	9.01	4.65	3.44	8.66	....
Dec.	17.97	16.12	9.05	4.64	3.24	8.87	....
Average for Year	22.48	20.55	11.98	6.17	3.49	5.96	....

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Mar.	Apr.	May	June	Day	Mar.	Apr.	May	June
1	4⅛	—	6¾	6¼	17	5⅛	5⅛	6⅞	
2	4⅛	—	6⅞	6¼	18	—	5⅛	6⅞	
3	4⅛	5⅛	6⅞	—	19	5⅛	5⅛	—	
4	—	5⅛	7⅛	6⅛	20	5⅛	5⅛	—	
5	5	5⅛	7¼	6⅛	21	5⅛	5⅛	—	
6	5⅛	5¼	—	6⅛	22	5⅛	—	6⅞	
7	5⅛	5⅜	7¼	6⅛	23	5⅛	5⅛	5⅛	
8	5⅛	—	7⅜	6½	24	5⅛	5⅛	5⅛	
9	5⅛	5⅜	6⅝	6½	25	—	5⅛	5⅞	
10	5⅛	5⅛	6⅛	—	26	5⅞	5⅛	5⅛	
11	—	5⅞	6⅞		27	5⅞	6⅛		
12	5⅛	5⅛	6⅜		28	5⅛	6⅜	5⅛	
13	5⅛	5⅛	—		29	5⅛	—	5⅛	
14	5⅛	5⅛	5⅛		30	—	6⅛	5¾	
15	5⅛	—	6⅛		31	—	—	5⅛	
16	5⅛	5⅛	6⅛						

Average Monthly Price Per Pound

Month	1931 Pence	1932 Pence	1933 Pence	1934 Pence
Jan.	4.160	3.052	2.264	4.429
Feb. ...	3.823	2.760	2.093	4.920
Mar. ...	3.822	2.047	2.099	5.136
Apr. ...	3.082	1.876	2.323	5.712
May ...	3.035	1.825	2.966	6.207
June ..	3.082	1.750	3.392	
July ...	3.048	1.875	3.860	

Month	1931 Pence	1932 Pence	1933 Pence	1934 Pence
Aug ...	3.385	2.654	3.811	
Sept. ..	2.524	2.485	3.728	
Oct. ...	2.898	2.425	3.957	
Nov. ..	2.890	2.518	4.096	
Dec. ..	3.115	2.444	4.200	
Average for Year ...	3.155	2.434	3.233	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Date	Apr.	May	June	Date	Apr.	May	June	Date	Apr.	May	June
1	—	10.75	11.80	11	12.15	11.45		21	11.75	11.55	
2	12.15	11.00	11.95	12	12.10	11.45		22	—	11.50	
3	12.20	11.00	—	13	12.05	—		23	11.65	11.50	
4	12.25	11.30	11.85	14	12.10	11.40		24	11.35	11.40	
5	12.20	11.20	12.10	15	—	11.45		25	11.10	11.50	
6	12.30	—	12.10	16	11.80	11.55		26	10.90	11.60	
7	12.25	11.45	12.20	17	11.80	11.70		27	11.15	—	
8	—	11.65	12.15	18	11.80	11.60		28	11.15	11.60	
9	12.15	11.50	12.25	19	11.75	11.65		29	—	11.60	
10	12.25	11.55	—	20	11.80	—		30	10.95	—	
								31	—	11.55	

Average Monthly Price Per Pound

	1931 Cents	1932 Cents	1933 Cents	1934 Cents
Jan.	10.27	6.65	6.23	11.25
Feb. ...	10.96	6.85	6.05	12.28
Mar. ...	10.90	6.86	6.39	12.30
Apr. ...	10.19	6.16	7.02	11.80
May ..	9.38	5.72	8.64	11.44
June ...	9.05	5.02	9.47	
July ...	9.28	5.87	10.76	

	1931 Cents	1932 Cents	1933 Cents	1934 Cents
Aug. ...	7.21	7.43	9.55	
Sept. ...	6.52	6.30	9.64	
Oct. ...	6.32	6.30	9.58	
Nov. ...	6.44	6.22	10.04	
Dec. ...	6.25	6.00	10.17	
Average for Year ...	8.56	6.41	8.63	

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1932	ON HAND 1933	ON HAND 1934	AFLOAT 1932	AFLOAT 1933	AFLOAT 1934	ON HAND AND AFLOAT 1932	ON HAND AND AFLOAT 1933	ON HAND AND AFLOAT 1934
Jan.	322,860	396,376	368,660	42,234	32,539	45,768	365,094	428,915	414,428
Feb.	318,936	381,794	357,094	51,728	32,898	53,063	370,604	414,692	410,157
Mar.	329,586	390,135	353,242	44,190	29,531	54,722	373,776	419,666	405,786
Apr.	336,957	382,167	351,981	40,387	30,745	56,251	377,344	412,912	408,232
May	336,719	364,623		50,453	43,342		387,172	407,965	
June	334,657	333,954		43,079	63,608		377,736	397,562	
July	333,729	326,609		37,894	57,435		371,623	384,044	
Aug.	342,888	325,148		42,846	53,084		385,734	378,232	
Sept.	346,154	334,637		46,188	57,255		342,342	391,892	
Oct.	358,282	343,579		40,176	58,568		398,458	402,147	
Nov.	360,386	353,852		40,879	57,140		401,265	410,992	
Dec.	379,000	364,541		38,360	55,606		417,360	419,147	

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1932	1933	1934	At end of	1932	1933	1934
Jan.	67,166	36,481	38,570	July	48,842	41,178	
Feb.	65,942	37,182	38,752	Aug.	47,079	39,480	
Mar.	64,280	40,689	40,501	Sept.	44,942	39,237	
Apr.	61,848	40,911	42,413	Oct.	42,327	37,101	
May	56,089	41,998		Nov.	40,606	36,139	
June	51,009	43,032		Dec.	37,407	35,615	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1933					
December	36,165	35,853	35,970	35,643	35,777
1934					
January	36,478	37,326	38,333	38,537	
February	39,064	39,509	40,133	39,775	
March	39,680	39,670	40,174	40,178	40,480
April	40,994	41,458	41,589	42,539	
May	41,815	42,908	41,900	42,118	
June	42,503	43,308			

Stocks in Liverpool

1933					
December	51,894	51,803	51,934	51,206	51,014
1934					
January	51,434	51,897	52,256	52,037	
February	51,937	52,615	52,920	52,944	
March	52,832	53,488	53,929	54,109	54,004
April	54,464	53,832	54,119	53,917	
May	53,915	54,268	54,123	54,276	
June	54,103	54,294			

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1931	1932	1933	1934	End of	1931	1932	1933	1934
Jan.	48,802	48,850	22,525	40,405	July	51,203	17,017	36,972	
Feb.	49,283	46,954	21,530	41,884	Aug.	48,971	20,649	38,601	
Mar.	49,590	46,591	24,594	47,933	Sept.	47,025	20,415	36,948	
Apr.	45,868	39,663	25,460	48,431	Oct.	52,132	23,158	37,282	
May	44,278	38,690	29,822		Nov.	46,947	25,419	39,018	
June	47,517	19,770	34,676		Dec.	45,795	25,341	38,269	

STOCKS IN OTHER CENTRES

End of:	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
Feb., 1933	37,323	28,540	2,033	4,210	6,006
Mar.	33,494	26,180	2,183	3,779	5,780
Apr.	33,391	27,710	2,214	3,428	5,204
May	32,613	24,090	1,534	3,177	4,790
June	35,919	22,930	1,147	2,913	4,321
July	35,020	22,900	1,007	3,208	3,830
Aug.	36,756	22,000	1,033	3,411	3,588
Sept.	36,083	25,900	1,107	4,286	3,288
Oct.	37,392	28,320	1,411	4,889	3,237
Nov.	36,965	38,530	1,285	5,575	3,383
Dec.	38,441	36,700	1,052	5,792	2,981
Jan. 1934	36,788	35,000	1,115	7,271	3,305
Feb.	39,630	35,000	906	5,366	3,420
Mar.	37,275	35,000		4,083	3,519
Apr.	33,765	38,000			

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total		Total		Total
1924	21,863,311	1928	24,247,282	1932	6,261,336
1925	26,001,664	1929	24,141,502	1933	8,713,962
1926	24,199,524	1930	17,364,096	1934	.....
1927	19,700,003	1931	11,253,800	1935	.....
1934:		1934:		1934:	
January	789,274	May	1,140,132	September	.....
February	1,262,311	June	.....	October	.....
March	1,651,548	July	.....	November	.....
April	1,635,722	August	.....	December	.....

U. S. Tire and Tube Statistics[1]

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1926	1927	1928	1929	1930	1931	1932	1933
Production	61,237	64,439	77,944	68,726	50,965	48,739	40,085	45,304
Shipments	59,002	64,059	74,296	69,395	53,638	48,151	40,260	44,094
Inventory[2]	10,456	10,264	13,624	11,838	9,003	7,775	7,644	8,888

Figures for Recent Months

	PRODUCTION 1932	PRODUCTION 1933	PRODUCTION 1934	SHIPMENTS 1932	SHIPMENTS 1933	SHIPMENTS 1934	INVENTORY 1932	INVENTORY 1933	INVENTORY 1934
Jan.	3,462	2,258	3,922	3,253	2,597	3,222	7,912	7,237	9,684
Feb.	3,871	2,339	4,335	2,553	2,292	3,285	9,172	7,377	10,725
Mar.	3,671	2,038	5,180	2,954	2,092	4,223	9,878	7,290	11,651
Apr.	3,517	3,123		3,698	3,654		9,846	6,778	
May	3,820	5,189		4,258	5,180		9,379	6,760	
June	5,643	6,100		10,065	6,305		4,999	6,615	
July	3,617	5,714		2,404	5,497		6,203	6,844	
Aug.	3,089	4,994		2,655	4,707		6,659	7,070	
Sept.	2,539	3,999		3,082	3,503		6,096	7,595	
Oct.	2,569	3,429		1,799	2,537		6,876	8,462	
Nov.	2,304	3,039		1,711	2,197		7,454	9,247	
Dec.	1,983	3,082		1,819	3,531		7,644	8,888	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1926	1927	1928	1929	1930	1931	1932	1933
Production	76,618	70,823	80,180	68,829	52,420	48,333	36,891	42,546
Shipments	71,591	72,896	77,127	70,592	54,938	50,021	37,911	41,391
Inventory[2]	16,200	13,692	16,117	12,807	9,999	7,922	6,749	7,815

Figures for Recent Months

	PRODUCTION 1932	PRODUCTION 1933	PRODUCTION 1934	SHIPMENTS 1932	SHIPMENTS 1933	SHIPMENTS 1934	INVENTORY 1932	INVENTORY 1933	INVENTORY 1934
Jan.	3,308	2,093	3,530	3,529	2,535	3,199	7,719	6,197	8,403
Feb.	3,281	2,224	4,077	2,728	2,102	3,323	8,760	6,357	8,445
Mar.	3,502	1,883	5,194	2,686	1,902	4,118	9,448	6,369	10,244
Apr.	3,225	2,853		3,385	3,051		9,441	6,189	
May	3,409	4,700		3,867	4,463		8,913	6,382	
June	5,279	5,448		9,019	5,778		5,174	6,097	
July	2,937	5,603		2,160	5,211		5,975	6,440	
Aug.	2,748	4,916		2,503	4,687		6,127	6,628	
Sept.	2,601	3,827		3,098	3,472		5,753	7,008	
Oct.	2,187	3,506		1,658	2,676		6,214	7,831	
Nov.	2,005	2,863		1,578	2,103		6,662	8,625	
Dec.	1,779	2,631		1,724	3,410		6,749	7,815	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete for 1929-1933. Beginning 1934, the Association reported its figures to be 97% complete.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	United States Passenger Cars	United States Trucks	Canada Total	Canada Passenger Cars	Canada Trucks	Grand Total
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933*	1,959,945	1,606,703	353,242	65,924	53,855	12,069	2,025,869
1933*							
Mar.	118,002	99,885	18,117	6,632	5,927	705	124,634
Apr.	180,713	153,350	27,363	8,255	6,957	1,298	188,968
May	218,347	184,698	33,649	9,396	8,024	1,372	227,743
June	253,387	211,483	41,904	7,323	6,005	1,318	260,710
July	233,141	195,023	38,118	6,540	5,322	1,218	239,681
Aug.	236,556	195,144	41,412	6,079	4,919	1,160	242,635
Sept.	196,143	160,900	35,243	5,808	4,358	1,450	201,951
Oct.	138,542	108,073	30,469	3,682	2,723	959	142,224
Nov.	63,987	44,429	19,558	2,291	1,503	786	66,278
Dec.	84,152	53,900	30,252	3,262	2,171	1,091	87,414
1934							
Jan.	161,086	116,353	44,733	6,904	4,946	1,958	167,990
Feb.	235,384	190,280	45,104	8,571	7,101	1,470	243,955
Mar.*	336,013	278,151	57,842	14,180	12,272	1,908	350,193
Apr.	360,620	292,812	67,808	18,363	15,451	2,912	378,983

* Revised.

Exports of Crude Rubber from Principal Producing Countries

(Long Tons

	BRITISH MALAYA [1]								DUTCH EAST INDIES [5]						
	Gross Exports	Gross Exports Minus Imports	Imports	Ceylon [2]	India & Burma [3]	Sarawak [4]	British North Borneo [3]	Siam [4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China [3]	Amazon Valley	All Other [6]	World Total [7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,296	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1932:															
Sept.	41,973	8,869	33,104	5,238	122	614	400	340	3,858	6,485	7,664	1,621	318	78	59,733
Oct.	37,931	9,798	28,133	2,945	139	583	350	428	4,022	7,051	8,944	1,147	414	247	54,403
Nov.	40,098	10,072	30,026	4,146	185	683	350	371	4,368	6,250	9,080	805	1,164	156	57,588
Dec.	40,118	10,089	30,029	5,801	367	644	350	406	4,683	7,066	8,594	1,211	824	150*	59,493
1933:															
Jan.	46,599	7,857	38,742	4,602	318	590	458	305	4,766	5,630	6,840	1,957	554	125*	58,887
Feb.	37,564	6,167	31,397	5,064	304	541	458	368	4,895	5,119	6,081	895	620	125*	55,867
Mar.	42,059	7,964	34,095	4,905	389	571	458	304	5,092	6,466	6,999	1,102	995	125*	61,501
Apr.	36,752	7,758	28,994	4,582	272	624	583	235	5,226	5,969	8,147	1,122	556	125*	56,435
May	42,902	13,664	29,238	4,643	475	1,091	583	359	6,782	7,298	13,195	1,371	918	125*	66,078
June	41,411	16,538	24,873	5,198	377	1,149	582	632	7,352	6,654	14,779	1,369	704	125*	63,794
July	50,531	18,772	31,759	4,201	270	1,358	728	797	7,367	8,580	16,534	1,310	913	125*	73,942
Aug.	52,266	17,869	34,397	5,839	246	955	728	926	6,460	7,985	15,161	808	1,116	125*	74,746
Sept.	49,607	15,146	34,461	5,111	125	1,027	728	611	5,868	9,164	15,005	1,702	656	125*	74,452
Oct.	61,002	17,390	43,612	5,674	271	959	750*	979	6,329	8,682	15,170	1,513	965	125*	84,879
Nov.	54,599	20,142	34,457	6,097	516	1,020	750*	1,191	6,684	9,951	14,474	1,599	956	125*	77,820
Dec.	57,579	18,110	39,469	7,062	964	989	750*	1,046	7,030	10,183	17,274	2,173	930	125*	87,995
1934:															
Jan.	55,055	21,184	33,871	7,551	1,531	1,197	750*	1,290	6,513	8,974	17,718	2,158	576	125*	82,254
Feb.	57,867	19,688	38,179	8,354	775	1,005	750*	1,264	6,706	10,277	17,466	1,100	831	125*	86,832
Mar.	58,515	26,470	32,045	6,954	1,412	1,360	750*	1,363	8,655	12,043	25,064	1,316	846	125*	91,933
Apr.	56,748	27,963	28,785	5,783	.....	1,447	750*	1,311	7,282	11,324	24,054	1,519	.....	.....	.....
May	69,403	.....	.....	9,393	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons in 1924, 6 tons in 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons in 1924, 2,239 tons in 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. * Figure is provisional; final figure will be shown when available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States [1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,176	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,496	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,024	6,440	864	4,650	894,638
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	56,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1933	.....	.....	61,953	54,120	19,332	66,831	19,341	29,830	13,534	11,166	1,243	7,831	5,520	10,402	.....
1933:															
Jan.	29,260	3,277	5,858	4,241	1,189	7,616	3,005	1,558	1,275	1,388	308	640	252	838	60,700
Feb.	22,970	7,102	6,603	4,460	1,175	8,508	993	2,820	2,001	1,670	375	564	132	681	60,055
Mar.	27,348	8,883	6,093	4,425	1,114	6,035	1,604	2,088	1,904	952	282	649	340	688	62,405
Apr.	20,236	7,765	6,308	4,805	555	5,495	2,207	2,274	1,580	882	163	606	281	400	53,565
May	24,894	11,085	4,144	4,622	1,704	5,289	1,278	1,691	425	710	—525	536	433	432	56,718
June	22,228	8,739	4,056	3,639	1,441	3,330	1,997	2,000	613	469	—519	772	541	400	49,706
July	43,824	3,961	3,774	4,103	1,192	1,460	1,146	2,952	2,347	299	16	486	435	287	66,282
Aug.	43,208	4,330	5,251	4,193	1,795	4,424	1,249	3,312	1,500	325	209	616	606	2,759	73,779
Sept.	43,886	4,341	4,111	5,841	2,620	5,369	2,055	2,168	794	864	189	604	790	577	74,211
Oct.	43,366	3,373	4,921	4,772	2,580	6,150	1,836	2,084	604	1,118	310	777	441	686	73,081
Nov.	39,633	3,955	5,419	4,086	2,184	6,296	942	4,483	301	1,129	222	878	493	882	70,903
Dec.	38,864	6,524	5,415	4,933	1,773	6,865	1,029	2,400	190	1,360	213	703	776	1,772	72,817
1934:															
Jan.	47,114	9,503	6,843	6,057	1,721	5,628	2,517	3,438	566	2,173	381	1,185	484	1,355	88,965
Feb.	33,087	10,785	7,373	5,490	1,854	4,570	2,388	.....	950	1,538	287	464	656	516	.....
Mar.	39,306	14,008	7,871	6,453	3,411	5,655	1,394	.....	671	965	284	836	.....	976	.....
Apr.	42,262	9,999	.....	.....	2,419	.....	.....								

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1] United States imports of guayule are included in this compilation. * Figure is provisional; final figure will be shown immediately it becomes available.

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

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